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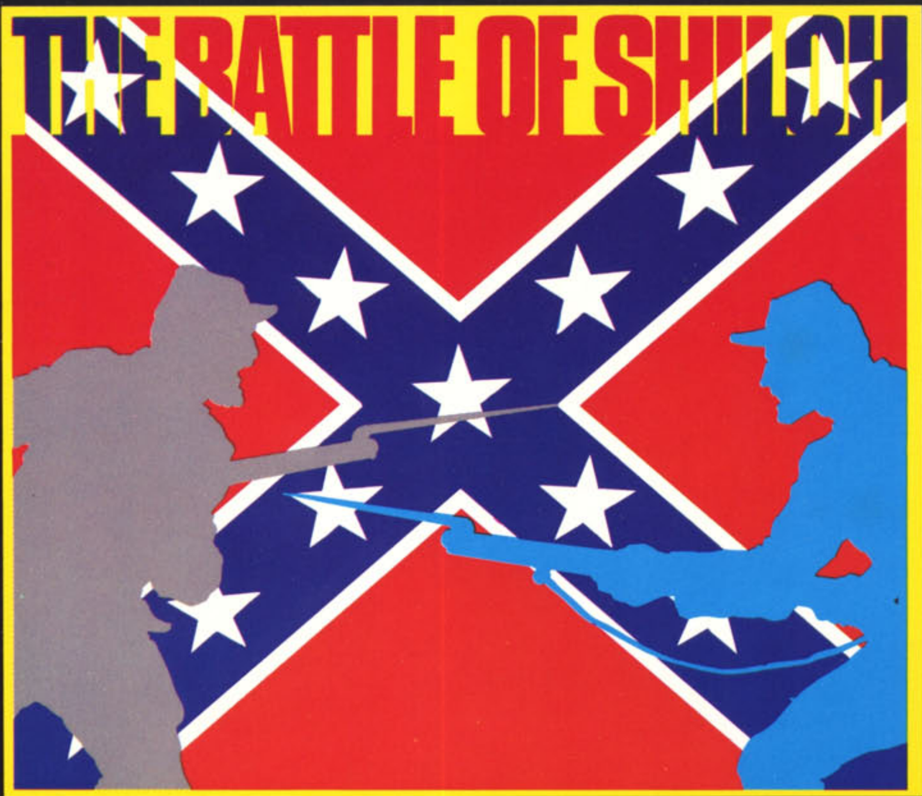
COMPUTER GAMING WORLD

VOL. 1, NUMBER 1

NOV.— DEC. 1981



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COMPUTER GAMING WORLD

VOL. 1 NO. 1 NOV. - DEC., 1981

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Editor: Russell Sipe
Asst. Editor: Kirk Robinson
Art and Layout: Tim Finkas
Operations: Suzanne Sipe
Marketing: John Cummings
Typesetting: Comarco Inc.
Printing: Quibodeaux Printing
Cover Art: Tim Finkas

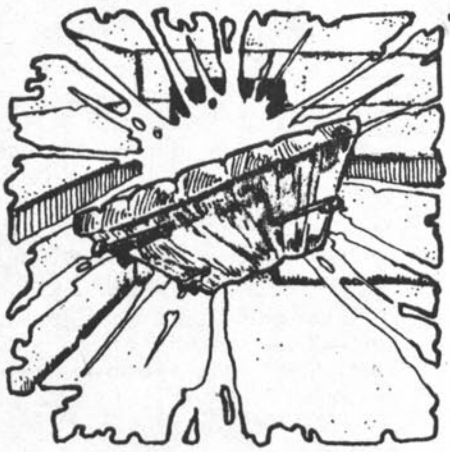
COMPUTER GAMING WORLD is published bi-monthly by Golden Empire Publications, Inc. Address correspondence to COMPUTER GAMING WORLD, 1919 E. Sycamore #203, Anaheim, Ca. 92805.

COMPUTER GAMING WORLD is available at game stores, computer stores, and through subscriptions. The subscription rate for one year (six issues) is $11.00. Canadian subscriptions add $4.00. Outside of United States and Canada add $8.00. All payments must be in U.S. dollars, made by check drawn on a U.S. bank, Visa Card, Master Charge, or money order.

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Special Thanks to Jim Steuard

Psalm 9: 1-2



From the Editor...

In recent months I have been encouraged time and again when I see the tremendous interest out there for a magazine on computer gaming. Many people have expressed the view that the time for a magazine on computer gaming is OVERDUE. Hopefully we have corrected that problem.

CGW is designed to meet your needs as a computer gamer. Each issue will evaluate computer games, give advice on strategy and tactics, announce new products, and provide a forum for you, the reader, to become active in the rapid nationwide development of the computer gaming hobby.

We hope to have a "Letters to the Editor" column beginning with the second or third issue. Please write us and express your thoughts on the articles presented in these pages, and/or your thoughts about the hobby in general. It is my hope that CGW will become a forum for an intelligent dialog between gamers, designers, manufacturers and retailers.

The coming explosion in use of personal computers has just begun, we at COMPUTER GAMING WORLD are excited about being a part of it, and are glad that you have joined with us.

Russell Sipe

WRITING FOR COMPUTER GAMING WORLD

If you would like to write for COMPUTER GAMING WORLD, we'd like to hear from you. Beginning with issue #2 CGW will pay 2 cents per word (base rate). We're looking for micro-reviews (400 words or less), feature articles on popular computer games, playing aids, scenarios, etcetera. Feature articles (500 - 2000 words) will have a better chance of being printed if you clear the subject with the editor before submitting it. Micro-reviews (500 words or less) are a good way to introduce yourself to our staff. Our biggest need is for micro-reviews of TRS-80 games. The following criteria play a part in selecting articles for CGW: 1.) Does the article meet our present needs?; 2.) Does the article reflect an understanding of what makes a good game. That is, does the writer understand game design and theory?; 3.) Is it well written?

Some guidelines for reviews are: 1.) Try not to spend too much time in describing the fiction or setting of the game (readers can read ad descriptions as well as you); 2.) Spend the bulk of your time evaluating the strong and weak points of the game (e.g. Does the game succeed as a game? Was the human engineering of the game well handled? How does the game compare with other games of similar type? etc.); 3.) Feel free to include playing tips and strategy.

Send articles to COMPUTER GAMING WORLD, 1919 E. Sycamore #203, Anaheim, Ca. 92805.

HOBBY AND INDUSTRY NEWS

Automated Simulations is working on two new games; SORCERER OF SIVA (FRP game with wizards and magic); and JABBERTALKY (A programmable word game). Both run on the Apple and TRS-80.

Strategic Simulations (SSI) has released THE BATTLE OF SHILOH and TIGERS IN THE SNOW. TIGERS runs on the Apple. SHILOH runs on both the Apple and TRS-80.

SSI has released the second edition of COMPUTER QUARTERBACK. Owners of the first edition can send their old diskette in with $15.00 and get the new disk. A 1980 team disk is now available at $15.00. The 1980 team disk for COMPUTER BASEBALL is also available at $15.00.

Level-10 is offering a $5000 reward for finding the ALKEMSTONE(tm). The ALKEMSTONE is the subject of a computer game of the same name. Clues in the game will lead some lucky gamer to the stone and $5000. Alkemstone runs on the Apple (48K). The game will be available by Christmas.

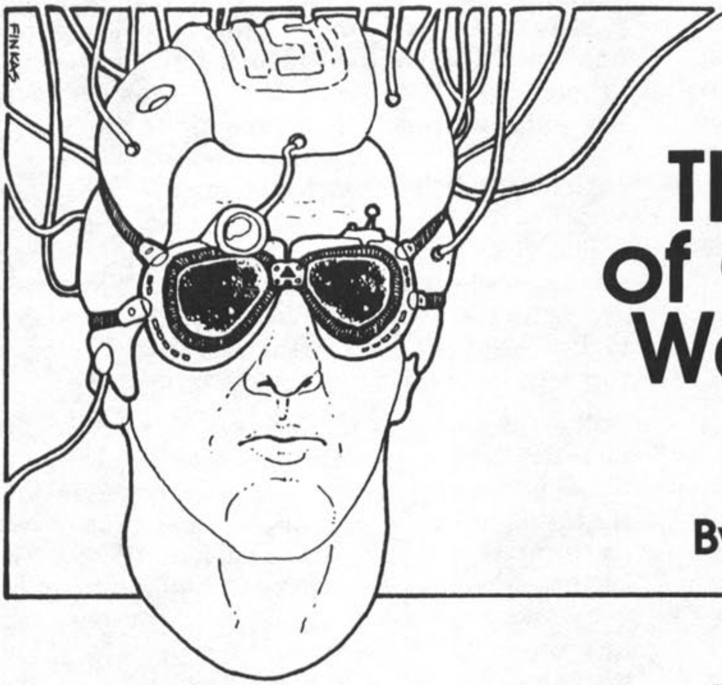
Synergistic Software's newest release is ESCAPE FROM ARTURUS, a two mode hi-res arcade game. In "Space Fortress" mode you defend the fortress. In "Escape" mode you pilot the evacuation ships. EFA will run on the Apple II (48K disk). $35.00.

CE Software has released the fifth chapter of the ongoing Swordthrust series --THE GREEN PLAGUE. It runs on the Apple (48K disk) and costs $24.95.

SSI will be releasing SOUTHERN COMMAND (Roger Keating's game on the Arab-Israeli War of 1973) in mid-November. Their NAPOLEON'S CAMPAIGNS 1813 AND 1815 should be out in December.

Avalon Hill Microcomputer Division's latest projects are COMPUTER FOOTBALL STRATEGY (based on the popular board game), DRAW POKER, GUNS OF FORT DEFIANCE (War of 1812), and DNIEPER RIVER LINE (which will include counters and a mapboard). All should be available in 1981.

SSI has paid Task Force Games an undisclosed amount of money in settlement over the similarities between SSI's WARP FACTOR and TFG's STAR FLEET BATTLES board game.



The Future of Computer Wargaming

By Chris Crawford

Personal computers have swept into society with a suddenness that has taken many wargamers by surprise. Wargamers are curious about the obvious possibilities of applying personal computers to their hobby, but as yet most have been reluctant to spend the one or two thousand dollars necessary for a personal computer. Right now there simply aren't enough wargames available for personal computers to justify the expense in the minds of most wargamers. However, everybody agrees that the future holds great promise of fabulous wargame experiences. The questions bedeviling everybody in this marketplace concern the future availability of computer wargames. Will there be an adequate quantity of wargames available for personal computers? Will these wargames be of high enough quality? What brands of computers will have the best selection of wargames available for them? This last is a particularly important question for the consumer, for the buyer who picks the wrong computer will find himself passed up by the bandwagon, left with an expensive and useless computer.

I will begin to answer these questions by addressing an almost universal misconception about computer wargames. Most wargamers feel that a good computer wargame will be just like a good boardgame, with the computer somehow making it better. The computer is viewed as a device for boosting the power of a wargame without really changing the game. Victims of this delusion see the wargame as defined by its incarnation in boardgames, and the computer as merely a variation on the standard.

A similar miasma impeded the development of the automobile at the turn of this century. The automobile was seen as a horse-driven carriage with no horses and an engine attached to the wheels. Indeed, it was called a "horseless carriage". This insistence on seeing the new technology in old terms resulted in its misapplication. The driver was seated on a high bench so he could see over the heads of the non-existent horses. The size of the wheels, the center of gravity, and the lack of wind protection were not suited for the higher speeds that the vehicle could develop. It took years of use before people began to think of the machine as an automobile instead of a horseless carriage. As the new attitude took hold, the vehicle began to change and show its true utility. Now the automobile is very different and quite indispensable.

Personal computers will follow a similar path. They are now treated as extensions of or variations on existing technologies. As time goes by, we will see them used more and more in their own right. Thus, wargames on personal computers will not be just like boardgames. There are of course attempts to produce boardgames on computers, and these attempts are just as silly as the early attempts to build mechanical horses. A computer wargame must be optimized to take advantage of all the strengths of the computer. At the same time, it must avoid the weaknesses of the technology. They will necessarily be very different from boardgames.

Special Capabilities of Computers

Five special capabilities of personal computers will distinguish computer wargames from their boardgame cousins. First, the computational power of the computer will allow it to replace the human as game executor and permit the human to concentrate on his real role of game player. In the process, combat results tables, terrain effects charts, and other such impediments will be eliminated. The computer will perform more extensive and more realistic calculations to execute the same functions without the human's intervention.

Second, the computer will allow us to have (at long last) true limited intelligence wargames. Many boardgamers have difficulty appreciating the importance of this capability. Indeed, the full intelligence required by boardgames is so taken for granted that many boardgamers resent the limited intelligence features of computer wargamers, feeling that they are being cheated out of their birthright. Limited intelligence applies not only to unit positions and strengths, but also to terrain effects, movement speeds, logistics effects, and the effects of weather. At present, applying limited intelligence to such factors is regarded as theoretical. Times will change.

Third, the computer will give us good solitaire games. The difficulties of gathering acceptable players for a game have long held back wargaming as a hobby. The computer will provide a challenging and intelligent opponent at the time of the human's choosing.

Fourth, the computer allows real-time play. At present, most people associate real-time play with arcade games. They therefore turn up their noses at the concept. Real-time play is both more realistic and more challenging than turn-sequence play. It directly solves the problem of simultaneous movement that has never been adequately solved with boardgames. It also provides a reasonable and realistic simulation of tactical combat. Tactical combat does indeed involve decision-making under time pressure. Wargames that do not include this element fall far short of simulating tactial combat.

Finally, computers allow telecommunications links for playing games over the telephone lines. At present there are not enough subscribers to the computer telecommunications networks to make such games practical, but within five years, it should be economical and practical to play games with far-away friends over the telephone lines.

What then will computer wargames of the future look like? I will not make specific predictions for the years ahead, the computer revolution is evolving too rapidly to permit simple extrapolations. I will define the forces which in my opinion will have the greatest influence on the development of this industry. The reader must draw his own conclusions from these pages.

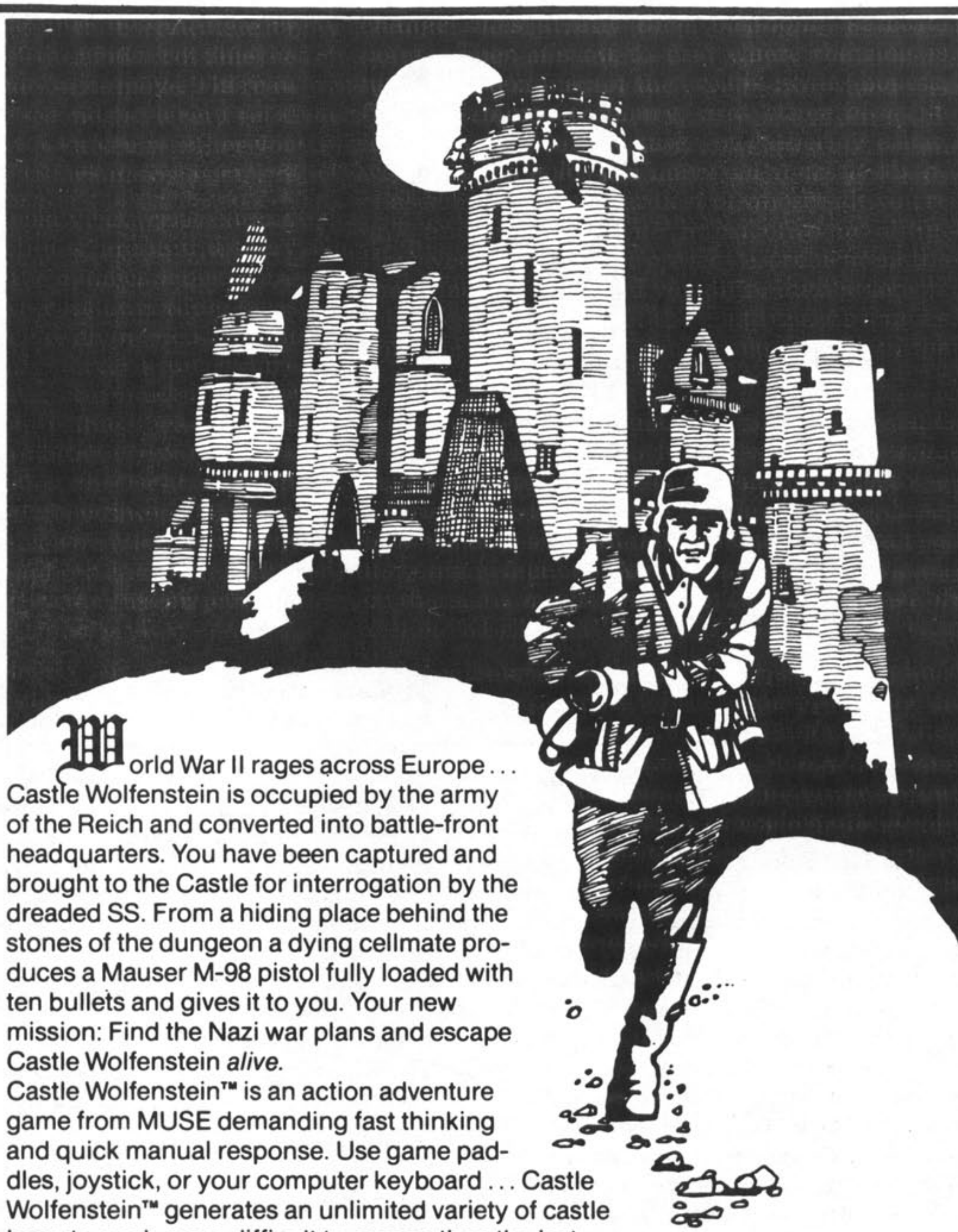
Hardware: Is It Powerful Enough?

The first major factor in the evolution of computer wargames is the hardware. Wargames are complex systems. Are these little computers up to the task of handling a real wargame? There are two ways to answer this question.

The first way is to measure throughput, a quantity which specifies the overall computational power of a computer. My judgement is that the throughput of any of the four major machines on the market (Apple, Atari, PET, and TRS-80) is entirely adequate to the task of handling a regular wargame. Even a 16K system with cassette only has enough throughput to handle a good wargame. My latest game, EASTERN FRONT 1941, is evidence of what can be done. The game will run on a 16K ATARI 400 with only a cassette. I daresay that it is the best wargame currently available, better even than games requiring 48K and a disk. (Please indulge me my vanity, but I really think it's true.)

There is little difference in the throughputs of competing machines. That is, two machines with the same amount of RAM and similar peripherals will have about the same throughputs. Thus, throughput is not a limiting factor, nor is it a factor that distinguishes between machines.

The second way to judge hardware power is to look at input and output ("I/O"). A successful computer must not only calculate the progress of a wargame, it must also communicate the progress of the game with the user. This applies to both the input from the user and the output to the user. An analogy might convey the importance of I/O. Suppose you were invited to play a special wargame, a wargame so special that you would not be allowed to enter the room in which the wargame would be played. Instead, you would be required to wait outside a closed door. Referees would pass slips of paper under the door describing the progress of the game. You would type your orders onto another slip of paper and pass this under the door to the referees. You would never be allowed to see the game itself. Sound silly? Dull? This is precisely how a wargame on a text-only machine like the PET or the TRS-80 would proceed. These machines would communicate with the user with only two devices: a screen capable of printing characters only, and a keyboard. The Apple can go further. Using an Apple is like

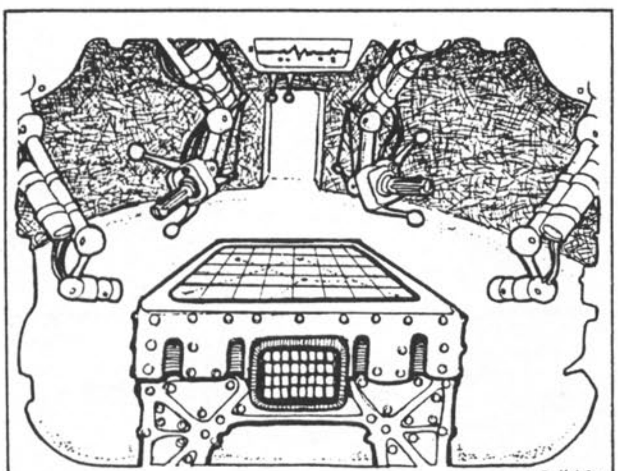


having color snapshots of the game slipped under the door. This helps a great deal. The Atari can go the furthest. Its graphics allows you to see the game's progress with the greatest clarity. Using an Atari is vaguely like watching a color television monitor showing the game's progress. It is still not as good as being in the same room, but it is certainly more than adequate.

Thus, while all the major machines have enough throughput to handle wargames, only the Apple and the Atari have the graphics capabilities to adequately depict the game. This does not mean that wargames cannot be done on PET and TRS-80. I have written wargames on both machines. The restrictions that these machines place on the wargame designer are so prohibitive that few designers will put up with the machines. Most will concentrate on the machines that give them more flexibility.

Programmers: Are They Good Enough?

Once we have found a powerful computer we must have programmers to write wargame programs for it. Do we have such people? In my job I work with professional programmers working on personal computers. I have met hundreds of such programmers and have developed a good feeling for their characteristics as a group. I can say with sad certainty that the average programmer is not sharp enough to write good wargame programs. Very few programmers in this business are bright enough to handle the task. Most programmers work in BASIC, a language for beginners. Even among programmers producing commercial software for personal computers, fluency in assembly language (the most powerful language) is rare. It is impossible to fully realize the power of a personal computer without using assembly language. Very few programmers have any idea what software human engineering is, much less how to implement it. Very few know how to obtain high-quality graphics on personal computers. Finally, very few understand the principles of algorithm creation. I have yet to meet a single programmer who has fully solved the mathematics of a hexgrid for computer use. I know the problem is soluble, for I solved it some years ago, and I know that it really isn't very hard. Nobody has put their mind to it. I can summarize my characterization of computer wargame designers with one sentence: almost all are amateurs. This will be a major factor impeding the development of computer wargames.



The world is not devoid of good programmers. I know many good programmers personally. Few of these programmers are writing software for personal computers. In order to motivate these people to write wargames, wargamers must provide adequate financial returns. Can the wargame marketplace do this? I think not. At the moment, the wargame marketplace is too small to attract good programmers. A good programmer can earn $30,000 to $40,000 per year in industry. The same programmer can work on a program for 6 months and earn perhaps $5,000 to $10,000 royalties with it. A salary from industry is certain and immediate; royalties for wargames are uncertain and are paid about a year after the work is finished. No matter how you look at it, the computer wargame marketplace is not worth the effort for talented people. There are, of course, fools like myself who produce wargames anyway. The monetary return is not a primary factor for such people. Fools like this are rare.

The computer wargame marketplace will improve in the coming years. More and more wargamers are buying computers, and they are willing to pay for good wargames. This will improve the profitability of wargame programming. We should therefore see some improvement in the numbers and quality of wargame programmers. The process will take several years.

Another factor is at work: piracy. Piracy is the unauthorized duplication of a product. Software piracy is easy to do and frequently committed. Many computer users are quite righteous about piracy, making up a wide variety of excuses to rationalize their theft of an author's work. I will not preach about the ethics of piracy, for honest people don't need sermons and dishonest people don't listen. I will not discuss the legality of piracy, for the laws are impossible to enforce. I will instead discuss simple cause and effect. If users consistently rip off authors by using their

products without properly paying them for their efforts, authors will stop writing software.

The effect is not black and white. One pirate will not bring the industry crashing down. Even widespread piracy will not kill the industry. Widespread piracy will have four effects: First, software will be more expensive because software sellers will try to recover their costs on fewer sales with higher prices. Second, software will be more expensive because software sellers will burden it with a variety of anti-piracy devices. You the consumer will pay for these protection schemes. Third, software will be less usable and enjoyable because the protection schemes used will probably interfere with the operation and use of the game. Fourth, fewer games will be available because fewer authors will be motivated to write programs when they cannot earn a good return for their efforts. As an author, I can accept the low royalties I make on my programs because there is always the satisfaction of knowing that I am making people happy when they play my games. But when I discover that people cheat me by stealing my games, my anger cancels the satisfaction. Nobody likes being ripped off.

You may not agree with this reasoning. Perhaps you feel that programmers are overpaid prima donnas. Perhaps you feel that wargame companies rip you off so many times that a little turnabout is fair play. Perhaps you feel that one little copy won't hurt. Whatever your reasons, you must agree that you as a wargamer want something from programmers: wargames. They won't do it unless you motivate them. You must offer them adequate money to motivate them. To make matters worse, you are in competition with other people who want the services of programmers: small businessmen, educators, arcade game freaks, and many more. These people are willing to pay good money, lots of it, for the services of the good programmers. Wargamers as a group can provide a decent marketplace for programmers in the future. If the group is poisoned by pirates, programmers will shun it for more profitable markets. It therefore behooves the wargaming community to stamp out piracy before it takes root.

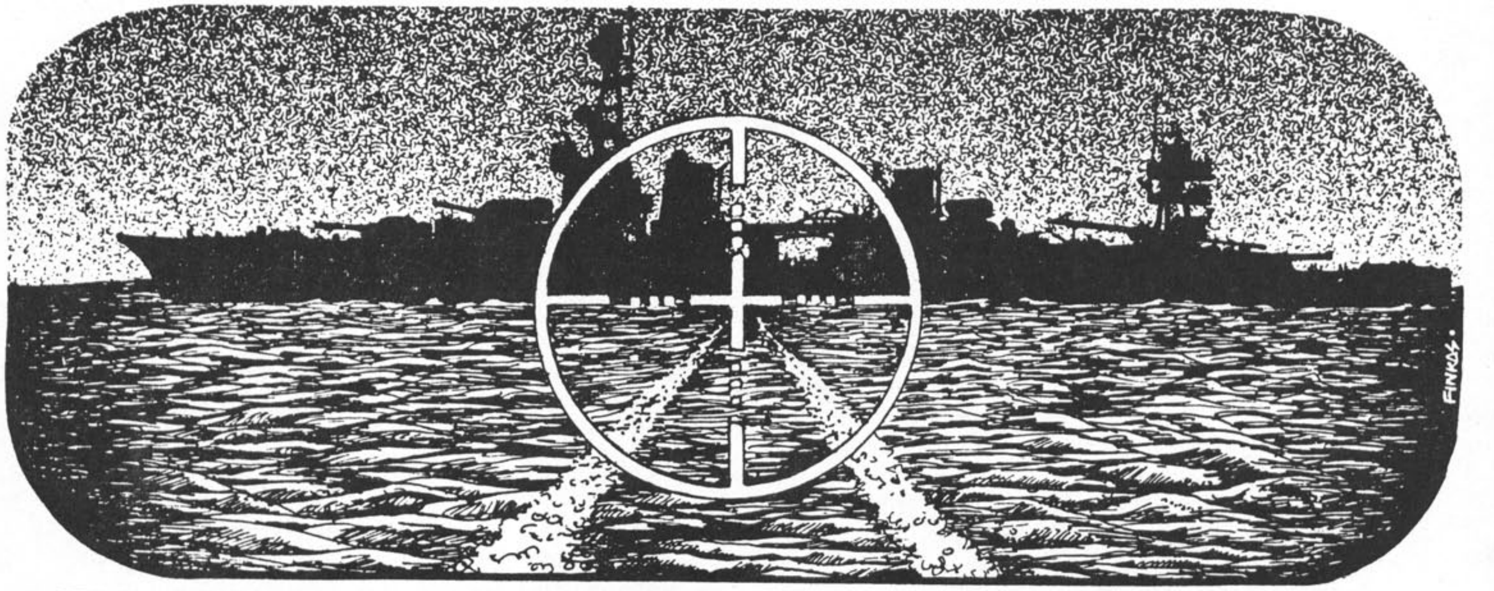
A final aspect of the marketplace is the machine-dependency of the market. Software written for one computer will seldom if ever run on another. Thus, availability of wargames for one machine in no way helps the owner of another machine. There is a good stock of wargames available for Apple computers right now. The TRS-80 has a small collection of wargames. The PET has very little. The Atari has a small and rapidly growing collection.

Conclusions

Where is the computer wargame headed? Nobody knows. The hardware we need for good wargames is here. We don't have enough good programmers to write good wargames, but market forces may induce more good programmers to enter the arena --- if piracy doesn't poison the market first.

Which machines will dominate the computer wargame industry? The PET and TRS-80 are out of the running. The Apple II dominates the market at present. However, the greater power of the Atari and its rapidly growing user base indicate that it will challenge and probably pass the Apple within a year or two. It is inevitable that the Atari will in its turn be replaced by an even newer, even more powerful machine. It takes about two or three years from the introduction of a machine for the cottage software industry to produce an adequate stock of software. Thus, the next generation machine will not be a significant market force for at least two years, and more likely three.

This is as far as I will take you. Beyond this, you must draw your own conclusions.



Torpedo Fire: Review and Analysis

Bob Proctor

TORPEDO FIRE is a game of submarine warfare for an Apple II with 48K and 1 disk drive. The game is on a self-booting disk and requires Applesoft BASIC in ROM. Although basically a game for 2 players, it can also be played solitaire. It might be more appropriate to call it a game of anti-submarine warfare since a solitaire player commands the surface forces and tries to prevent the computer (as sub-commander) from sinking ships in the convoy. **TORPEDO FIRE** is a historical simulation, a wargame -- you won't need fast reflexes to play. It's a battle of wits between the commander of a submarine and the commander of the escort force guarding a convoy.

Like all SSI games, **TORPEDO FIRE** comes in a box with a rulebook and playing aids --reference cards, plastic coated plotting sheets and grease pencils. Of these, the rulebook is the most important; you have to read it to learn how to play. The reference cards are very useful; the plotting sheets can be a help but aren't needed to play. All components are of high quality.

The game covers all of World War II, at least it does if you are willing to create your own scenarios. Specifications for subs and escorts from Germany, England, the United States and Japan are built into the game, but there is only one ready-to-play scenario. You can create additional scenarios and types of ships by using a program called the "SSI Shipyards."

TORPEDO FIRE is strictly a tactical game. Neither side is bothered with the possibility of running out of fuel, torpedoes or depth charges. There is no tomorrow; points are given only for damage done today. Obviously, this leads both sides to press the attack more than might be the case in real life, but it also tends to ensure that every game will have a definite conclusion.

Where boardgames use a single mapboard which gives both players an identical view of the battle, computer wargames can show each player something quite different. In **TORPEDO FIRE**, the submarine commander gets a view "through the periscope" while the escort commander sees a map which is a composite of sonar, radar and visual sightings. Although I will mention some faults that keep this game from being perfect, I want to make it clear at the start that **TORPEDO FIRE** is an excellently conceived game. Fortunately, its faults do not keep it from being fun and exciting, nor do they keep it from being the best simulation of a confrontation between submarine and destroyer presently available. However, there is room for improvement.

THE GAME SYSTEM

Each turn of **TORPEDO FIRE** represents 60 seconds of "real" time. Before the turn starts, both players must give orders to their ships. As with other SSI games, each gets a turn in front of the computer, the other moves away so that he cannot see the monitor screen. It is during this order phase that the players use their radar and/or periscope to view the battle. They may call up a

status report for each ship to inspect damage, confirm orders, check on the reloading of torpedoes, or whatever. Each side has a secret password to prevent the enemy from peeking at their status and orders.

Once all orders are entered, movement and combat are conducted simultaneously during the Computer Activity Phase. Every 3 seconds, the computer recalculates ship positions and checks for collisions between ships and orders to fire weapons. Depth charges which have been dropped explode as they reach the depth for which they've been set and torpedoes may detonate as they hit or pass close by a ship. At this point, both players may watch the monitor while the computer prints a list of messages that describe the action:

```
COLLISION CHECK AT TIME = 0
COLLISION CHECK AT TIME = 3
COLLISION CHECK AT TIME = 6
COLLISION CHECK AT TIME = 9
TORPEDO AWAY
TORPEDO AWAY
COLLISION CHECK AT TIME = 12
COLLISION CHECK AT TIME = 15
TORPEDO NARROWLY MISSED F3
F3 SUNK BY TORPEDO!
15 VP'S AWARDED TO UNDERWATER SIDE
COLLISION CHECK AT TIME = 18
```

and so forth . . . . .

Other SSI games have been criticized for the long time taken by the computer. In **TORPEDO FIRE** this phase begins with the warning, "This will take 1 - 5 minutes." This estimate is very accurate; I've timed it from 40 seconds for 3 ships to 7 minutes for 14 ships with 8 torpedoes running and a dozen or so depth charges sinking. Usually it takes a minute to a minute and a half. Waiting doesn't seem tedious since there are messages appearing on the screen constantly. When it does take longer than 2 minutes, it's because an attack is underway and then this phase becomes the most exciting part of the game!

After the computer has simulated 60 seconds of time, there is a brief search phase while the computer determines who can see what and then it's time for orders again.

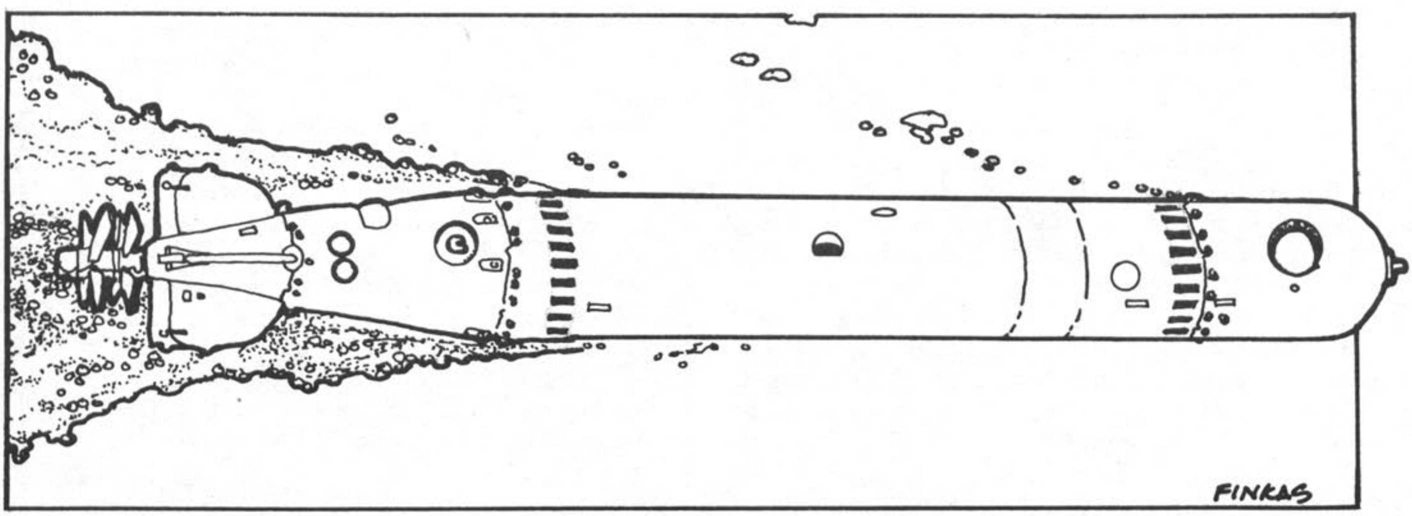
GETTING STARTED

The first time you play, **TORPEDO FIRE** will probably seem awkward. There is ample information available but the game makes you work for it. This is quite deliberate. It would be very easy to have the computer tell you the exact bearing and range of every enemy ship you can see, but would that be realistic? Judging these two factors through a periscope, was one of the skills a new submarine skipper had to learn. So it is here.

There is a "Torpedo Data Computer" to help you calculate an intercepting course for your torpedoes, but results depend entirely on your estimation of the enemy's course, range and speed. Likewise, the destroyer captain will have to learn to visualize ship movements up to several minutes ahead and to develop an effective technique for dropping a pattern of depth charges.

Ship handling can be a real challenge and it's not at all unusual for surface ships to run into each other in the first few games. Unfortunately, such collisions always result in both ships sinking with full victory points awarded to the enemy. I consider this an unrealistically heavy penalty, but it does encourage good seamanship.

To help the escort commander, there is an "execute" command which allows him to preview his orders before they are actually carried out. Each escort in turn can be made to move in slow animation across the map. Depth charges are marked with large black asterisks. If a mistake is



discovered, it's still possible to revise orders for any or all ships. My only complaint is that you can't preview the convoy's move unless you've given it orders, which you can only do every 6 turns.

The use of sonar is another fine art. The slower the escorts go, the better able they are to maintain contact. But then, too, the more time the sub has to put a fish into a tanker. A good tactic to use when you have two or more escorts is to keep one almost stationary to keep a fix on the sub while the orders run in at high speed to attack. It is NOT a good idea to attack at low speed. You'll know where your enemy is, but you'll also get the stern blown off your destroyer!

GRAPHICS

TORPEDO FIRE's use of graphics is well thought out. Positional information is presented with high-resolution graphics and status information is presented in text. This approach contributes much of the "feel" of the game.

Visually, the graphics are fields of blue with white grid lines to help the viewer judge distance and bearing. The escort player's maps view the battle from overhead with each type of ship distinguishable by a different "deckplan". The view through the periscope, on the other hand, has perspective. The grid lines converge in the distance and ships appear smaller as they get further away. Again, each type has a distinct profile, both from broadside and at an angle. When seen bow on or stern on, it is harder to distinguish ship types but it can be done at close range. In order to make it easier to judge range and direction the periscope does not give a water-level view. This would put most ships on the horizon. Instead, the 'scope appears to be 50 to 100 feet tall. This sounds unusual, but I quickly got to where I didn't notice it at all. A lower vantage point would obviously be more realistic but wouldn't convey enough information.

There is one aspect of the graphics which could be improved. If you point the periscope north (bearing 0 degrees) and see a ship coming directly at you, you will see the ship bow on. So far, so good. However, if you now pivot the 'scope so that it points NE (bearing 45 degrees), the ship is still in your field of view but it no longer appears to be coming at you! Instead of bow on, the profile is now seen at a 45 degree angle. This can be really confusing and it offends my sense of realism; a subjective matter, I admit. The problem could be solved by comparing the ship's course to the bearing from the ship to the periscope rather than the direction the periscope is pointing.

WHAT'S A SIMULATION

According to Webster, a simulation is something which has "a superficial resemblance" to something else. Almost every computer game simulates something; we can tell them apart by what they simulate and judge them by how well they do it. An auto racing game, for instance, may simulate driving on a famous race track. A stock market game, on the other hand, would simulate investing. They might both be good simulations, but one would develop good reflexes, the other good judgement.

A wargame is a kind of HISTORICAL simulation and should therefore bear a resemblance to historical events. Since a good game requires some freedom of choice, the ideal historical simulation drops you back to a certain point in time and lets YOU make the important decisions which determine events from there on.

Even though historical simulations in the form of computer games are very new, they've been around for years in other forms. The last 10 years have seen tremendous growth in the sales of board games and many of these are historical simulations. Let's look at some of the characteristics that can be used to describe a game based on historical events.

The SUBJECT may be military, political, economical, sociological, or any combination of these. Games on military history predominate, probably because they've been around the longest. Professional soldiers have been using them as a training tool since the 1820's. As people in other fields discover their value, games which model other aspects of history will become more common.

The SCALE of the game is like the scale of a map. Does it show the major features of a large area or a small area in greater detail? To use a military example, a game could portray the conditions which face a private in combat, those which face a general leading an entire army, or the leader of a nation conducting every aspect of the war. Generals call these three levels; Tactics, Strategy, and Grand Strategy, but gamers use many different terms to describe each scale. To give one example, if one turn in the game represents one minute of "real" time, it will be a tactical game because it would take forever to

Continued on page 32

The sub-commander can also use radar to get oriented. It gives a typical "scan", a circle with a white "second hand" sweeping 'round and 'round. The ships appear as blips -- you can judge range and bearing but not type. Radar is particularly useful at night because it then has greater range than eyesight and so will reveal ships which will not appear through the 'scope. On the other hand, radar sometimes will not show a ship that you can see quite clearly! Radar on both sides show false blips about 10% of the time. I find it both amusing and appropriate to be wargaming in an imperfect world.

THE FEEL OF THE GAME

The great joy of a computer game is the absence of what I call "bookkeeping". There are no pads and pencils, no counters to move, and no dice to roll! The processes of resolving combat and determining radar and sonar contacts are all hidden within the computer. Experience with the game, playing a variety of situations, is the only way to learn how effective and dependable your weapons are. Of course, it's unlikely that a person would be given command without some knowledge and, with this in mind, the rules contain several examples of probabilities. For instance, an escort moving at 5 knots will, with the worst possible luck, still be able to find a sub within 1000 yards. These examples may not mean much to a first-time reader but they do when you go back and study them after you've played a couple games.

TORPEDO FIRE will reward a player who plans ahead and who calculates relative ship positions precisely. For instance, if a torpedo comes within 150 yards of a ship there is a chance it may detonate (due to magnetic exploders). The closer it comes, the greater the likelihood of an explosion. While I can't give you any percentages, my experience indicates that accuracy pays big dividends.

Depth charges always go off when they sink to the depth for which they were set. The problem here is that you have no idea how close they were to the sub. To help players learn this, there is a "Beginner's Option" which can be selected with any game. If you choose it, the computer will tell you by how much you missed every time a depth charge explodes if it was within 250 yards of the sub. The trick is to drop a pattern that guarantees at least one will be close no matter how the sub twists and turns.

THE INTRODUCTORY SCENARIO

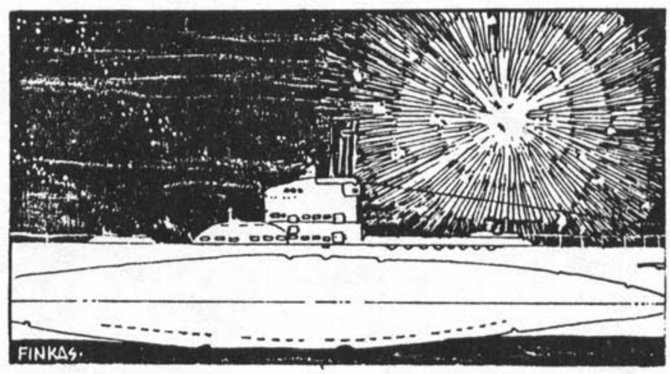
When you boot **TORPEDO FIRE**, you are presented with a menu of five choices. Until you are ready to design your own scenarios, only one of these choices will get you started on a game; the Introductory Scenario.

In this game, a German U-boat attacks a British convoy. The convoy has 3 ships -- a freighter, a tanker, and a freighter in line -- and is flanked by destroyer on each side. The sub has just been detected directly astern of the starboard escort. It is in a good position to close in and put fish into the tanker or the rear freighter. If the sub can sink both, it wins since they are worth 30 and 15 points respectively and the U-boat is only worth 40. The more patient sub commanders will use all 4 bow tubes to "make sure" of the freighter and then go deep and wait out the depth charge attack for a 15 to 0 victory. This is a good training scenario for both sides. Once you feel you've got it all down pat, though, you're going to want variety.

THE SHIPYARDS

The Shipyard program is not of the same high quality as the game program. While it does what it was designed to do, it's not very forgiving if you make a mistake. It begins by asking you what period of the war this is, what nationality the ships are, and how many ships there are. While it usually checks to make sure you've given a valid answer, there is no cross-checking. You can enter the wrong combination of "valid" answers and not discover it for some time. If you do, you may have to start all over, which means re-booting the disk. If you spent 10 minutes entering data for a new scenario, you'll just have to do it again!

Next, you enter the starting position for each ship and change any other data such as speed, course, point value, or damage. Rather than ask about each item individually, all of the ship's data are displayed and you are allowed to make whatever changes you want. This is a two-edged sword and there is a warning in the program about being careless. If you create an invalid field in the ship's record, you probably won't discover it until the game program "crashes"' because it can't process the field. If this occurs, you'll have to go back to the Shipyards and use the "modify existing scenario" option.



Once you finish entering a scenario, you must give it a name and write it on a disk. **TORPEDO FIRE** has its own Disk Operating System which would be fine if it were complete. It doesn't check for duplicate names and if you give it one, it doesn't erase the old file before it writes the new one on top of it. Net result: unreadable file; enter your scenario again and give it a unique name this time. "Wait a minute," you say, "If I wanted to change a scenario why don't I use the 'modify' option?" Well, that works as long as you're changing the data for one or more ships, however, it won't let you add or delete ships. It sounds like we have to delete the scenario and start all over if we want to do that, right? Only half right. You can start over again, but you can't delete a scenario! Nor can you transfer scenarios from one disk to another without re-entering them.

All of this would be forgivable if you could use Apple DOS to delete or copy but, as I'm sure you've guessed by now, the format used by the game isn't readable by either 13 or 16 sector Apple DOS. As an off-shoot of this, the disk you save your scenarios on must be formatted by the game before you attempt to save the scenario. If you try to write a scenario on an unformatted disk, you will lose it!

One other piece of advice to those of you who will be creating scenarios for **TORPEDO FIRE**: if you want to start a ship with some damage already done, be sure to reduce the Total Damage Points field as well as Current Damage. The reason for this is that victory points are based on the difference between the two. Unless you want points to be awarded for damage which occurred before the scenario began, this difference must be zero.

THE COMPUTER AS OPPONENT

A hallmark of SSI games is their sophistication in computer opponents and **TORPEDO FIRE** is no exception. Otto Von Computer (him again! I thought he went down with the Bismarck ... must have been rescued by a U-boat) is a skillful and unpredictable enemy. He will launch torpedoes from varying ranges and angles, surface to use the deck gun at night (if no escorts are close by) and go ever so slowly to avoid sonar detection when the hunters get near.

In all solitaire scenarios, the computer places the submarines at random. Thus, you can't take any unfair advantage because you know where the sub will start in a 2 player version of the same scenario. In one scenario I created, a tanker plays the role of the carrier SHOKAKU returning to Japan after being damaged in the Battle of the Coral Sea. With the help of a single destroyer, it must try to evade a single American sub which stands between it and home. The computer does not seem clever enough to always place the sub so that it has a chance at the target. I don't know if this is due to the 12 knot speed of the carrier or lucky course changes, but twice the sub has apparently never been able to get into firing position. Of course, of the four times when contact has been made, I've lost three.

CONCLUSIONS

TORPEDO FIRE represents the leading edge in computer wargames as of early 1981. Although extremely well conceived, the concepts could have been better implemented. It's easy to think of things that would be nice to add to **TORPEDO FIRE**. There is no provision in the current game for escorts which are too small to torpedo or have wooden hulls (and thus won't set off a magnetic exploder). For that matter, the submarine captain should be able to set the torpedoes to run shallow or deep and choose between contact and magnetic exploders. Other possibilities would be to add the ability for cargo ships to maneuver independently and fire guns, to set a maximum depth (the bottom) for submarines, or to allow for the effects of choppy versus smooth seas.

More importantly, it would be interesting to play the submarine side in a solitaire game. The novelty and "you-are-there" feeling of the graphics for the submarine player make it, in my opinion, much more fun for the solitaire gamer. The only justifiable reason to leave this out would be the difficulty of programming good tactics for the surface ships. Perhaps this is the reason; if not, I think SSI missed a bet by leaving out this option. I certainly wouldn't object to seeing it in an improved release of **TORPEDO FIRE**.





ROBOTWAR from Muse Software is a computer game for the Apple II which pits robots against each other in a struggle to the death. All robots are equipped with the same hardware. The only difference between robot combatants is the program you write which determines how your robot will respond on the battlefield.

The software package includes a diskette and a 75 page manual which covers everything needed to create your own robot. The diskette has five robots with simple routines, ready to do battle against each other or to challenge any robots which you, your friends or family design.

The battles take place on a square field with walls 260 meters on each side. You observe the battle from directly above the battlefield where up to five robots can compete at one time. The computer keeps track of all damage sustained by the contestants and displays it as a percentage on the right side of the screen. When damage exceeds 100% robots are destroyed and removed from the battlefield until only one robot remains.

The program you write runs in the robot's on-board computer. This computer contains 34 registers, ten of which control or monitor specific robot functions like speed and position. The robots can move in any direction by inputing horizontal and vertical speed to the appropriate speed registers. Robots have a maximum speed of 25 meters per second and accelerate at four meters per second.

The robots are equipped with a gun and radar which can be turned in any direction. When a direction is loaded to the radar register a radar beam is emitted. The returned beam represents the range and is stored back in the radar register. The range can then be moved to the shot register to fire the gun.

If a shell hits or explodes near a robot, the robot will sustain damage. Damage, however, does not degrade the performance of the robot. Damage accumulates until the robot's limit is reached and is then removed from the field. Robots can also sustain damage by running into walls or other robots.

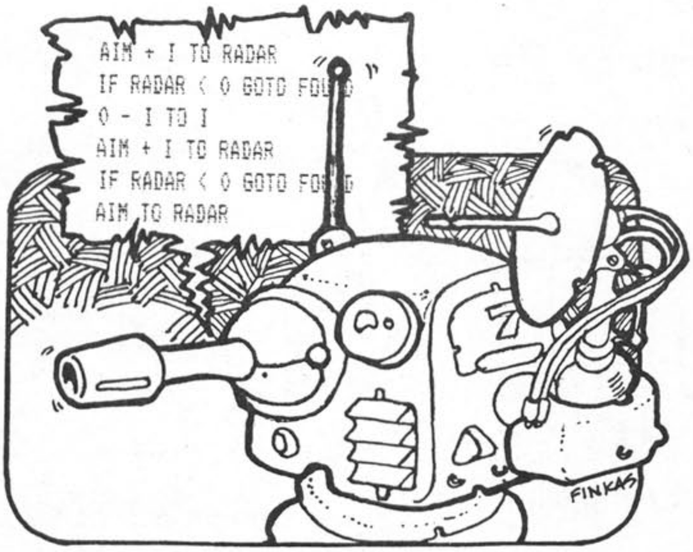
The robot programs are written and entered into the computer using a text editor. The robot language is similar to a very limited BASIC which makes it easy to learn. When you finish entering and editing your program it is assembled and translated into robot object code. The assembler checks for errors and prints a message indicating the type and location of any errors found. Once assembled the robot can be put onto the battlefield. There is also a test bench which is useful for finding bugs. It allows you to step through the program, an instruction at a time, while displaying the robot's registers.

The game comes with five preprogrammed robots of simple complexity. They are Target, Scanner, Mover, Random, and Bottom.

Robot Target is just that. He does nothing.

Scanner is programmed to sit and scan for other robots. When he spots one he will continue to fire as long as the target remains in his radar sight.

Mover is like Scanner except when hit he executes a movement routine which moves him to another random place on the battlefield.



Random moves in a random direction pointing his radar and gun in the direction of travel.

Bottom is the most sophisticated of the supplied robots. His program moves him straight down to the bottom wall and then has him move back and forth between the left and right edges. As he moves his radar and gun are pointed straight up.

After watching the robots battle each other and observing the pit falls of the designs, I started forming a strategy for my first robot. Mover scanned 360 degrees and sometimes missed targets because he increments his radar in thirteen degree steps. I figured, from a corner a robot would be out of the way and only have to scan 90 degrees. Hence, my first robot, Coward.

Coward heads for the upper left corner with his radar scanning a narrow path in front of him to avoid running into other robots. Once set in the corner Coward didn't scan very fast because I had to step the radar only four degrees in order to assure spotting all targets. I tried two damage routines and neither was very effective. By the time Coward could accelerate he would take two hits and usually took another before he got up into the corner.

Despite these short comings, Coward could usually defeat all but Bottom. Bottom would move to the left side and hit Coward once. Coward would exercise his damage routine and just get set when Bottom would come over and hit him again. This would continue with Coward seldom getting a shot off.

Bottom could beat the other robots in a one-on-one battle because he had a major advantage which the other robots didn't. Because he moved constantly, he didn't need a damage routine when hit. Other robots seldom got more than one shot off at him, and it usually missed.

My next robot was designed to deal directly with Bottom. I needed to knock Bottom out, take his place, and improve his routine. And thereby was born Bottom Killer or BK for short.

BK moves toward the botton of the field, searching below him for other robots. Once at the bottom the SIDE routine looks left and right to see if Bottom is down there. He then moves along the lower wall like Bottom, but with his radar facing forward twenty-five degrees. If a target is spotted the FIRESCAN routine fires a shell and then moves the gun to a new angle in an effort to keep the radar and gun trained on the target.

The angle in the FIRESCAN routine is computed using the speed of BK and the range to the target. The actual speed is not really important. It is used because it gives the direction BK is moving. Direction is important for determining if the angle is to be increased or decreased.

Angles can be computed with a linear function because for small angles the cosine is fairly linear. The angles don't become large unless the range is small, but a close range accuracy is not as important because the target occupies a larger field of view.

BK proved very successful against the supplied robots and Coward. Still, he is only an improved Bottom which leaves him vulnerable for the same reason. BK was quickly destroyed by a less sophisticated robot built by a friend because he knew where to find him.

I next wanted to create a robot which would move continuously. In doing so he would follow a circular pattern. George would be difficult to lock onto since he would be moving and wouldn't follow a straight line path.

The circular path is in reality an octagon, turning 45 degrees every third time through the SCAN routine. In order to compute the vertical and horizontal speed I used the first ten memory registers to store a sine function table. Dividing the heading by 45 will produce a direction between zero and seven. Putting this direction in the index register and adding one will allow you to read the appropriate register for vertical speed. The contents of this register is then multiplied by the last known range to a wall and stored in Speedy (vertical speed control). The horizontal speed is then found by adding two to the index register which is the same as adding 90 degrees to the heading.

The damage sensor in the SCAN routine ignores near hits by adding five to the damage and comparing it to the damage level stored during the TURN routine. When a hit is detected a check is

made to determine if George is still moving. If so he makes a premature 45 degree turn. If not, then he has run into another robot and a close quarters search is made. The heading and range of the shortest radar range is stored and used at the end of the search for the KILL routine.

Another new feature of George is in the FIRE routine. When a target is spotted the gun is brought to bear and a shot fired. Then the range is stored in register P and a counter, Q, is set. These are then used by SCAN routine to continue firing blindly in the general direction of the target while the radar continues to scan.

The defensive aspects of George are good, but his offence is lacking. His fifteen degree increment of the radar misses a lot of ground. I had to add a section to the end of the TURN routine to direct the radar at 90 degrees to the direction of travel or the whole center would go unnoticed. BK will beat George, but George will last a lot longer than any other robot. If his radar scanning could be improved he would be a tough robot to beat.

These are the robots I have developed thus far. I will now cover some facts I have discovered about the robot computer along with some new ideas I may include in future robots.

The Robot Computer

It should be noted that floating point numbers can be stored in most memory registers as demonstrated by the trig table in robot George. The memory registers will also hold numbers greater than 1,024. I had the A register over 256,000 before terminating one experiment.

The index register will hold only integers between 0 and 25. Numbers outside this range will be converted back into it. Contrary to the example given on page 20 of the instruction manual, loading 27 to the index register will produce a one which will then use the contents of the A register. Loading 26 will produce a zero and use the Z register. The index register can also be used for finding the integer of a number if the number is positive and less than 26. That is what I did at the end of the SCAN routine of George.

The Aim register is similar to the index register. You can load any number you like, positive or negative, and it will be converted to a heading between 0 and 359. This makes computing angles simple since you won't have to worry about an angle being out of range.

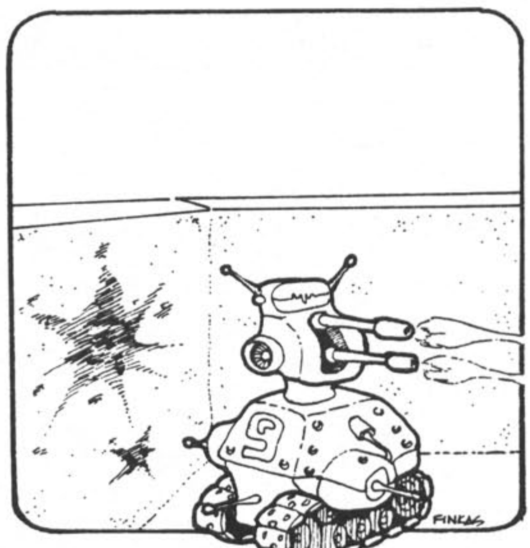
Scanning presents a major problem. Since the robots have no way of detecting the direction from which they are hit, they must scan everywhere to find the enemy. For a 360 degree scan this can be very time consuming. Bottom has one way of overcoming this problem, but as a result he is predictable and thus easy to find and destroy.

Coward demonstrated that a four degree increment seemed to pick up all targets. This is fine for ranges greater than 200 meters, but if you are scanning a wall twenty meters away it is wasteful. By using an inverse function of range, similar to the BK FIRESCAN routine, you can develop a scan which would increase its increment as the distance to a wall decreases. This should improve the time it takes to perform a thorough scan.

My most recent robot Test is an experimental robot which uses such a scan routine. He also has a new fire routine. The fire routines used by Scanner and Mover are short but too fast for the delay required for the gun cooling period. If you watch closely, when they are locked onto a target their radar flashes twice for each shot fired. Instead of running through the same code twice to fire a shot I use the time to check for movement by looking left and right of Aim. Aim is trained on the last sitting of the target and is used as a reference point to direct the radar in a search. Once spotted, Aim is repositioned if necessary and a shot fired. The routine looks long but Test fires as rapidly as Mover and can follow, with his radar and gun, targets that do not move too fast. Of course Test is not yet a complete robot as he still needs a movement and damage routine.

I hope I've stimulated your imagination since I would like to see other robots, for it is through competition that we will build better ones.

ROBOTWAR (Muse) requires an Apple II with 48K and Applesoft in ROM. The price is $39.95.



```
: ROBOT "BOTTOM KILLER"
: CREATED BY
: BILL EDMUNDS

   -35 TO SPEEDX
    IF X < 100 , 35 TO SPEEDX
    DAMAGE TO D
 DOWN
   80 TO SPEEDY
   IF Y < 150 , 150 TO SPEEDY
   IF DAMAGE # D , 2 * SPEEDX TO SPEEDX
   DAMAGE TO D
 SLOW
   IF X < 50 , 35 TO SPEEDX
   IF X > 200 , -35 TO SPEEDX
   GOSUB SCAN
   IF Y < 220 GOTO DOWN
   30 TO SPEEDY
   IF Y < 245 GOTO SLOW
   0 TO SPEEDY
 SEARCH
   0 TO SPEEDY
   DAMAGE TO D
   GOSUB SIDE
   IF X > 150 GOTO LEFT
   GOTO RIGHT
 LEFT
   -120 TO SPEEDX
   335 TO AIM
 ABLE
   AIM TO RADAR
   IF RADAR < 0 GOSUB FIRESCAN
   IF X < 30 GOTO SEARCH
   IF SPEEDX = 0 GOTO SEARCH
   GOTO ABLE
 RIGHT
   120 TO SPEEDX
   25 TO AIM
 BAKER
   AIM TO RADAR
   IF RADAR < 0 GOSUB FIRESCAN
   IF X > 220 GOTO SEARCH
   IF SPEEDX = 0 GOTO SEARCH
   GOTO BAKER
 FIRESCAN
   0 - RADAR TO SHOT
   18 * SPEEDX / RADAR + AIM TO AIM
   ENDSUB
 SIDE
   90 TO AIM
   AIM TO RADAR
   IF RADAR < 0 GOSUB FIRE
   IF X < 30 , 310 TO AIM
   IF X > 220 , 50 TO AIM
   AIM TO RADAR
   IF RADAR < 0 GOSUB FIRE
   ENDSUB
 SPOTTED
   0 TO SPEEDY
   180 + N TO AIM
 FIRE
   0 - RADAR TO SHOT
   IF DAMAGE # D ENDSUB
   AIM TO RADAR
   IF RADAR < 0 GOTO FIRE
   ENDSUB
 SCAN
   Y + 100 / 10 TO N
   180 + N TO RADAR
   IF RADAR < 0 GOSUB SPOTTED
   0 - N TO N
   180 + N TO RADAR
   IF RADAR < 0 GOSUB SPOTTED
   0 TO N
   180 TO RADAR
   IF RADAR < 0 GOSUB SPOTTED
   ENDSUB


*****************************


: ROBOT "GEORGE"
: CREATED BY
: BILL EDMUNDS

: GENERAL USE VARIABLES

: W = DAMAGE COUNTER
: R = RADAR RANGE TO WALL
: T = RADAR HEADING
: P = LAST KNOWN TARGET RANGE
: Q = SHOT COUNTER
: A TO J - TRIG TABLE

: REG. SINE ANGLE
: ---- ---- -----
:  A = -.66    0
:  B = -.5    45
:  C =   0    90
:  D =  .5   135
:  E =  .66  180
:  F =  .5   225
:  G =   0   270
:  H = -.5   315
:  I = -.66  360
:  J = -.5   405

: COLLISION VARIABLES
:    L = TEMPORARY RADAR OFFSET
:    M = OPTIMUM RANGE
:    N = L AT OPTIMUM RANGE
:LOAD TRIG LOOKUP TABLE
  2 / 3 TO E
  0 - E TO A TO I
  1 / 2 TO D TO F
  0 - D TO B TO H TO J
 START
   AIM - 90 TO AIM
   AIM TO RADAR
   IF RADAR < 0 , 0 - RADAR TO SHOT
   R TO T
   RADAR TO R
   IF R < 70 GOTO START
   IF T < 125 GOTO START
   AIM + 45 TO T ;RADAR TO DIAGONAL
   T TO RADAR
   IF RADAR < 0 GOSUB FIRE
   T / 45 TO INDEX
   GOSUB TURN
   DAMAGE TO W
 SCAN
   IF DAMAGE + 5 < W GOSUB HIT
   T + 15 TO T
   T TO RADAR
   IF RADAR < 0 GOSUB FIRE
   IF RADAR > 0 RADAR TO R
   IF R < 70 GOSUB WALL
   Q - 1 TO Q
   IF Q > 0 , P TO SHOT
   T / 45 TO INDEX
   IF INDEX * 45 = T GOSUB TURN
   GOTO SCAN
 TURN
   INDEX + 1 TO INDEX
   IF INDEX > 8 , INDEX - 8 TO INDEX
   R * DATA TO SPEEDY
   INDEX + 2 TO INDEX ; COS = SIN + 90
   R * DATA TO SPEEDX
   IF T > 355 , T - 360 TO T
   DAMAGE TO W
   IF Q > 1 ENDSUB
   T + 90 TO AIM TO RADAR ;CHECK CENTER
   IF RADAR < 0 , 0 - RADAR TO SHOT
   ENDSUB
 FIRE
   T + 5 TO AIM
   0 - RADAR TO SHOT
   GOSUB SLOW
   0 - RADAR TO P
   6 TO Q
   IF P < 50 GOTO SLOW
   ENDSUB
 HIT
   IF SPEEDX # 0 GOTO WALL
   IF SPEEDY # 0 GOTO WALL

 STOPPED
   -500 TO M
   90 TO L
   GOSUB FIND
   45 TO L
   GOSUB FIND
   0 TO L
   GOSUB FIND
```

Continued on page 33

COMPUTER GAMING WORLD'S ROBOTWAR TOURNAMENT

We at COMPUTER GAMING WORLD are impressed with Muse's ROBOTWAR and want to thank Bill Edmunds for introducing the game to us. Not only is it an excellent game, it can also be played by two or more persons geographically separated. This makes it somewhat unique among games for today's microcomputers. For these reasons COMPUTER GAMING WORLD (in cooperation with Muse Software) announces the FIRST COMPUTER GAMING WORLD ROBOTWAR TOURNAMENT.

You are cordially invited to put your best ROBOTWAR robot to the test. There is no entry fee. There will be a trophy and official ROBOTWAR T-shirt for the winner. T-shirts will also be given to runners-up. The T-shirt is to be worn by the designer, not the robot.

1) Send your robot program (source and object codes) on a diskette to COMPUTER GAMING WORLD, 1919 E. Sycamore #203, Anaheim, Ca. 92805. Mark your package "Attention Robotwar Tournament".

2) Include a brief description of the robot. What is it designed to do?

3) Only one entry per person.

4) Be sure to include return postage if you want your diskette returned.

5) Include T-shirt size (S, M, L, XL) and color (Blue, Yellow, Tan) in case you are a winner.

6) Entries must be received by January 20, 1982.

7) Winners will be announced in Issue # 3 (Mar-Apr 1982).

The actual structure of the tournament will be determined based on the number of entries. If possible a round robin type tournament will be used. COMPUTER GAMING WORLD assumes no responsibility for damaged or lost diskettes.

B - 1 NUCLEAR BOMBER: A Strategic Map

CHRIS CUMMINGS

In Avalon Hill's B-1 NUCLEAR BOMBER, you fly a B-1 bomber deep into Russian airspace, drop a one megaton nuclear warhead on your target and return to Greenland. Naturally the Russians will try to stop you.

As the bomber gets deeper into Russia the radar picks up MIG fighters and SAM anti-aircraft missiles as they are launched from the defense complexes at you. The radar gives a constant update on the approaching interceptors as they close in. They are armed with tactical nuclear warheads.

B-1 NUCLEAR BOMBER is a fun game. It has much of the intensity of flying the critical mission into hostile airspace. The game has no graphics and describes the action to you in words.

The game, however, is limited in both technical correctness and uses some shallow gaming techniques.

Minor details bothered me about the game. The game bomber travels at 4500 KPH regardless of altitude. The real B-1 can go Mach 2 only at high altitude. At sea level it is subsonic. Also the SRAM range is uneffected by altitude when the real SRAM's range is reduced from 100 miles to 35 miles as you get closer to the ground.

These technical flaws are understandable in a game program but because of them there is no penalty for flying low. The entire game strategy is reduced to flying on the deck until you get close enough to a defense complex to blow it to bits with a Phoenix air-to-ground nuclear strike.

If you blow up five or six defense complexes on your way in, you can waltz back after your strike without incident.

Also, once a missile/fighter is launched you get constant updates such as "MIG-31 intercept in 326 seconds." If you alter course even 180 degrees and fly right at him at 4500 KPH the intercept time stays the same. There is no way to outrun a pursuer or any penalty for flying right at him.

The biggest flaw with the basic game seems to be the lack of a map of Russia. Flying blind into Russian airspace is foolish. The navigational computer gives range and bearing to any place requested but if you have no idea where you are or what to expect you're in for a short and most likely unsuccessful flight. To correct this flaw we provide a strategic map for B-1 NUCLEAR BOMBER. A quick study will show that there are better routes to take than just flying straight at your target. It also shows that MUrmansk is the easiest objective while VOlograd may be the toughest.

You enter the map from the upper left. The starting point is about 3000 KM out in a direction along a line drawn through MOskva and LEningrad.

KHar'kov shows up twice on the map. The game program puts it at about 52N 52E when the city is actually at 50.00N 36.15E. To fix the location change program line 55 DATA ..., KHAR'KOV, 8850, 7450, ...to , KHAR'KOV, 7850, 7450,...(in Apple II version). If you plot the cities from the program data, this change moves the city of KHar'kov much closer to its actual location.

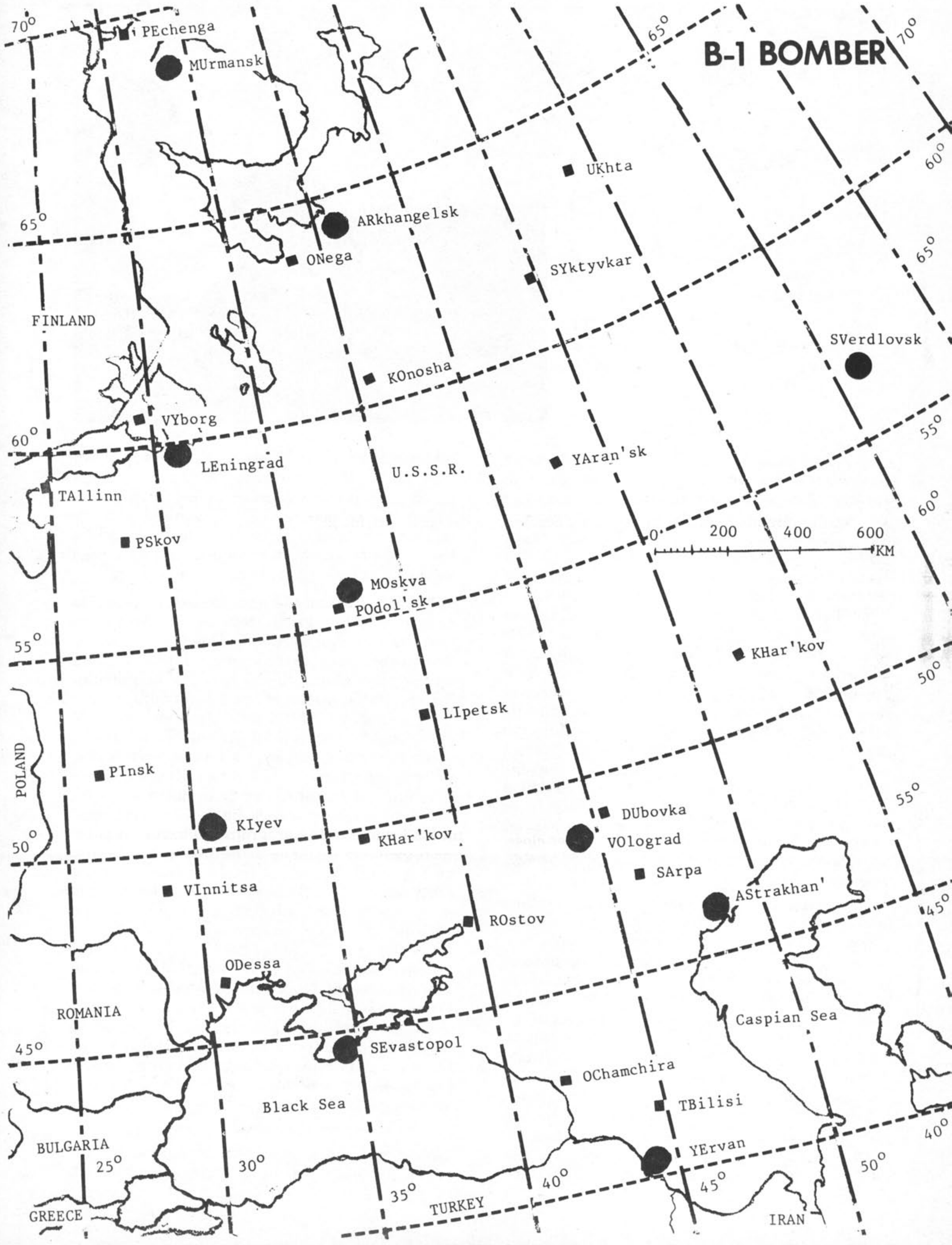
B-1 NUCLEAR BOMBER is written in BASIC and loads in a 16K machine. Since it is in BASIC it executes slowly. Some autopilot turns can take a minute or more to execute with no activity on the screen.

The good thing about being in BASIC is that the original program can be easily accessed and modified to include more realistic action and flight performance. It seems that the more improvements I make to the program the harder it is to reach the target. The more "realistic" it gets the "smarter" the Russians get and the more I get shot down.

Maybe flying a nuclear bomber into Russia at treetop level is not as easy as it seems to be.

Regardless, B-1 NUCLEAR BOMBER from Microcomputer Games, Inc., a division of Avalon Hill Game Co. will bring hours of fun, especially to the war monger who has always wondered what it would be like to sit in the cockpit of a sophisticated flying machine and drop a nuclear load on the "enemy".

B-1 BOMBER


PEchenga
MUrmansk
UKhta
ARkhangelsk
ONega
SYktyvkar
FINLAND
SVerdlovsk
KOnosha
VYborg
LEningrad
U.S.S.R.
YAran'sk
TAllinn
PSkov
0
200
400
600
KM
MOskva
POdol'sk
KHar'kov
LIpetsk
POLAND
PInsk
DUbovka
KIyev
KHar'kov
VOlograd
SArpa
VInnitsa
AStrakhan'
ROstov
ODessa
ROMANIA
Caspian Sea
SEvastopol
OChamchira
Black Sea
TBilisi
BULGARIA
YErvan
GREECE
TURKEY
IRAN
70°
65°
60°
55°
50°
45°
40°
25°
30°
35°
40°
45°
50°

Air Force Mission Planning by Computer



by Russell Sipe

It is 6:45 am, October 8, 1983. Captain Greg Boyles stands next to Squadron 223's flight planning station (FPS), selects a riverbend on the map and presses the digitizer to it. CAMPS (Computer Aided Mission Planning System) plots a flight path from Captain Boyle's airfield (R-113 just north of Seoul) to the riverbend. The color monitor displays the plot, amount of fuel used, selected altitude, and other necessary information. Boyles shakes his head in slight annoyance when he sees that his projected path takes him through a zone of medium threat (projected on the monitor by a yellow blotch). Looking to the west of the riverbend he had intended using for a navigation point he selects a nearby road intersection. Touching the digitizer to the map Boyles watches CAMPS replot his course. This time CAMPS tells him that his new plot is completely in a safe zone. Satisfied with this leg Boyles goes on to plot the next three legs of his flight which brings him to the east end of a lake. Just across the lake is his target - Koksan airfield. There's no "safe" path now. Boyles thinks to himself as he keys into the computer the path of his bomb run. For the next three minutes his plane will fly through red "high risk" and yellow "medium risk" zones. Following his attack run, during which he will drop 24 "500 lb." bombs from his F-4, Boyles will fly to a road intersection several kilometers north of the Koksan airfield. Having plotted a course through the worst of the danger zone Boyles plans his next four legs to carry him through "safe" corridors back to R-113. Selecting a new option from the CAMPS menu of functions, Boyles thinks to himself how much better the CAMPS system is (with it's terrain effects features) than the old manual method (which lacked any terrain masking effects). For several days he had been flying within three kilometers of a particular SAM (Surface to Air Missile) site that, thanks to CAMPS, Greg knew could never hit him if he flew at 500 feet or lower. This was so because CAMPS showed him the masking effect of a particular ridgeline north of the SAM site, an effect which couldn't have been seen by just looking at his navigation chart.

The monitor flashes a message that it is ready to continue his flight plan. Now Boyles zeros in on that three minute selection of his flight in which he will be exposed to the greatest danger. Calling up a series of charts Boyles asks the computer for the specific locations of his threats during those three minutes. CAMPS tells him that two SAM sites, one 12 klicks southeast of his IP (initial bomb run point), and one 8 klicks north of his IP, will combine to give a 52% probability of kill on his F-4. Since he will be too far from the range of the stand-off jamming planes, he decides to see what the effect of both his self protection jammer and an escort jammer would be on the SAM sites. CAMPS processes his request and returns a new kill probability figure - 28%. "That helps" thinks Boyles "but a flight with a 28% kill probability will play hell with my insurance rates and on what the Air Force pays me..." -- jolted back to reality and the problem at hand Boyles requests CAMPS to tell him what would happen if ARMs (Anti-Radiation Missiles) were fired at the SAM sites. The answer -8% kill probability. "That's better", Boyles thinks to himself and orders the computer to print out his flight plan while he looks around the OPS room for his squadron commander to request the escort jammer and ARM attack.

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What may sound like a computer game that we will be playing in the near future is, in reality, a

computer based software package that the U.S. Air Force is presently field testing. The system, which is known as CAMPS (Computer Aided Mission Planning System), is being developed by Comarco Incorporated of Anaheim, California. According to Woody Woodbury, Advanced Programs Director at Comarco, CAMPS is in an advanced development stage and is projected to be operational in one to three years.

COMBAT MISSION FLIGHT PLAN CGW TGT:

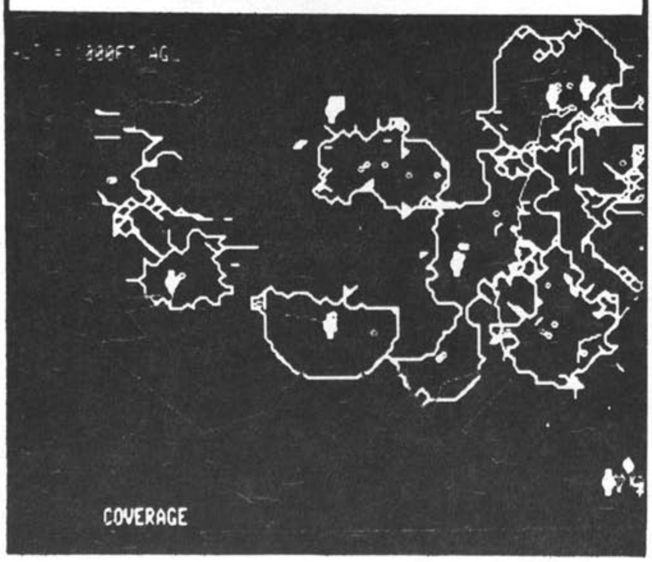
IDENT	CHECKPT	ALT SAA	MAG CRS	DIST TO GO MVAR	GND SPD	ETE CUM	FUEL REM
0	R 113						
KIM 58	3735.83N						
049/ 4	12652.08E						
1	RIVERBND			22			2.5
KIM 58	3757.63N	500A	009	48	420	03+07	15.2
015/ 25	12653.25E			7W		03+07	
2	RD INTER			14			0.5
KIM 58	3808.85N	500A	326	35	500	01+47	14.7
358/ 37	12641.58E			7W		04+54	
3	RIVER Y			16			0.6
KIM 58	3824.65N	475A	352	18	500	01+58	14.1
356/ 53	12636.18E			7W		06+53	
4 IP	E LAKE			14			0.6
KIM 58	3838.37N	500A	023	4	540	01+39	13.6
002/ 66	12640.82E			7W		08+31	
5 TGT	KONSAN			4			0.2
KIM 58	3840.95N	200A	292	0	540	00+29	13.4
359/ 69	12635.92E			7W		09+01	
6	RD			13			0.5
KIM 58	3852.13N	200A	344	127	540	01+24	12.9
356/ 81	12628.97E			7W		10+25	
7	RR/RD IT			10			0.3
KIM 58	3851.12N	500A	265	117	480	01+08	12.6
349/ 82	12616.67E			7W		11+33	
8	RR/RDIT			26			0.8
KIM 58	3825.37N	500A	190	91	480	03+15	11.8
340/ 59	12613.87E			7W		14+47	
9	ISLAND			42			1.4
KIM 58	3746.38N	500A	208	49	480	05+14	10.4
295/ 45	12554.73E			7W		20+02	
10	R 113			50			1.6
KIM 58	3735.83N	500A	105	0	480	06+15	8.7
049/ 4	12652.08E			7W		26+16	

SCL: 10XMK 82SE 2XWG TANK 0XGUN AMMO 1XALQ119

3XAIM7 ROUTE NAME: CGW

TOTAL DISTANCE: 211 TOTAL TIME: 26+08

TOTAL FUEL: 9.0



In 1977 several branches of the military conducted a test, the EWJT (Electronic Warfare Joint Test), at Nellis AFB outside of Las Vegas. EWJT showed the need for a mission planning system which could take into account known enemy sites as well as the effects of terrain around those sites. The offspring of the EWJT was EWTAP (Electronic Warfare Tactics Analysis Program). In 1978, after some involvement with the Navy, Comarco was contracted by the Air Force to develop a system similar to EWTAP know as EPASS (Experimental Penetration Analysis Support System). Now known as CAMPS, the system is designed to be used by squadrons to assist in planning air-to-ground missions. The entire operation (which runs on a Convergent Technologies micro-computer using a digitizer and touch command menu), was designed to be portable, rugged, and usable by pilots without computer training (a pilot can learn to use the system in minutes if necessary).

CAMPS is an improvement over manual mission planning due to its consideration of the effects of terrain on the performance of enemy weapon systems. Presently only the radius of known installations is used by planners, with no consideration for the effects of terrain. CAMPS utilizes the terrain features around an enemy site to project a true "radius". By flying at lower altitudes aircraft not only can elude ground-based radar, they can also make use of the natural lay of the ground to mask themselves from enemy fire. This terrain analysis can be crucial in dense enemy environments. In the above example of fictionalized future warfare between North and South Korea, Captain Boyles used CAMPS to tell him where the safe corridors were, based on the terrain around known enemy weapon sites.

When the CAMPS system is initially set up, terrain and other important features are entered through the use of the digitizer board. Then all known enemy weapon installations are entered into memory making the system operational. As new sites are discovered and old ones removed or destroyed the data file is updated. CAMPS is designed so that a pilot can plan his entire mission in ten minutes or less.

The pilot enters basic information such as: aircraft type; ordinance loaded on each "station" of the aircraft; desired speed and altitude for each leg of the mission; and the latitude/longitude points (through the digitizer) of the various navigation points. Most of the data may be stored in memory and can be "called up" rather than

Continued on page 34



by Stanley Greenlaw

Most wargamers are familiar with "The Playboy Winner's Guide to Board Games" (Playboy Press) and "The Complete Book of Wargames" (Fireside) by Jon Freeman. The author of these two excellent surveys of the gaming hobby is also very active in the computer gaming field. His name can be found in the credits of many Automated Simulation Games. One of his latest projects along with J. W. Connelly is CRUNCH, CRUMBLE, AND CHOMP!, (The Movie Monster Movie Game).

CRUNCH, CRUMBLE, AND CHOMP! lets you be the alter ego for the movie monster of your choice as you devastate one of four famous cities by burning buildings, crushing bridges, as well as eating people, cars, and other assorted moving things. The "Feature Creatures"(pre-generated monsters) are Goshilla, Kraken, Arachnis, The Glob Mechismo, and Mantra. Each being similar to well known movie monsters. Or if you prefer to be monsterous in a different way than the feature creatures you can create your own. To create your own you choose a carcass such as "Sea Monster", "Robot", "Brontosaur", or one of 6 other types. Then you give to that carcass monsterous abilities such as breathe fire, stomp, atomize, etc. Each ability is payed for with "Crunch Points" of which a limited number are permitted per carcass type. With this "Create your own" feature you can create anything from a dragon (brontosaurous carcass with flight and fire breath) to a giant tomato (to roll through the town crushing buildings, rolling over and eating people as well as leaving a web-like trail of tomato paste behind). This is a game for your wildest fantasies.

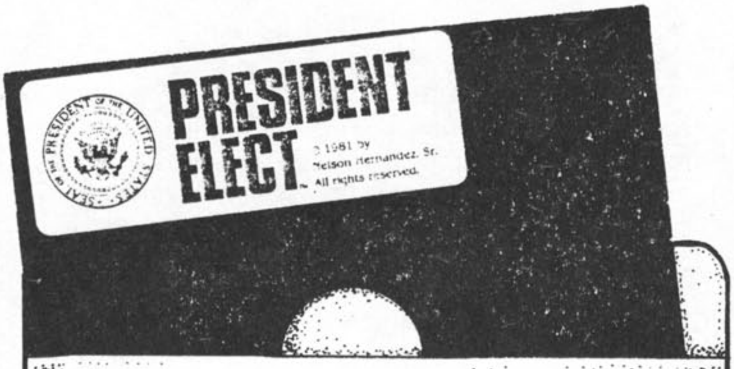
Speaking of fantasies, which of us hasn't at one time or another wanted to strike back at the bureaucratic institutions that have mistreated us? Remember the time the Post Office delivered your copy of Time magazine and there were three articles clipped out? Remember when the I.R.S. told you that you had to pay a tax penalty because you didn't report the $10.00 you were awarded by the state disability board in consideration of your career ending accident which occurred when the phone company dropped a telephone pole on your car? Now you can strike back to your heart's delight. For with CRUSH, CRUMBLE, AND CHOMP! you can take your monster into the heart of Washington, D. C. and crush the I.R.S. to rubble, or burn the Post Office to the ground, or atomize the Justice Department. Not to mention all the mean things you could do to the Pentagon, White House or Capitol Building.

If you prefer you can take your destructive urges to New York City and ravage Wall Street. Then again you can terrorize San Francisco and surrounding areas (how about eating everyone in Marin County). Or you can try your oversized talents in the legendary testing ground of the great monsters, Tokyo. The fact that the game is set in actual cities and most of us are familiar with at least one of them makes the game more interesting than if the game were set in an abstract city or some lesser known city like Sheboygan.

CRUSH, CRUMBLE, AND CHOMP! follows the pattern of several other Automated Simulation games in that the game is played in semi-real time. As the alter ego to the monster you enter your command at the keyboard. Unlike arcade games which have a perfect correlation between player time and screen time, CRUSH, CRUMBLE, AND CHOMP! regulates activity so that your monster will only accept your orders when it has finished executing it's previous orders. With this type of design you must be careful what orders you give. Nothing is more frustrating than commanding your monster to turn around and in the several seconds that it spends executing that command watch your intended victim run harmlessly away while a helicopter, tank, and national guard unit come up on your blind side and pulverize you.

The bottom line in CRUSH, CRUMBLE, AND CHOMP! like so many games is your score. You score points according to the objective you select for your monster. You can choose to run a balanced scenario in which you get points for just about everything you do. Or you can choose to run a killer monster which gives more points for killing human units. Other objectives are "Combat machine", "Destruction", and "Survival".

Continued on page 34



The Political Apple

by Russell Sipe

Walter: *"So at 10:42 PM here on election night, Nov. 5, 1984, Ronald Reagan has won his second term of office in the most remarkable landslide since Nixon beat McGovern in 1972. From our computer projections, we anticipate that Ronald Reagan will carry every state except Minnesota and the District of Columbia. He will thus gather 525 electoral votes to 13 for Walter Mondale. The popular vote is projected to be 55% for Reagan, 44% for Mondale, and 1% for Libertarian candidate Ed Clark. Dan, we've seen the landslide developing all evening, beginning with the stunning victory of Reagan in Massachusetts, what do you think this election shows us?"*

Dan: *"Well, Walter, this election with very few exceptions has given us little to be surprised about. The computer predictions that our network did back during the Democratic primaries showed that Walter Mondale never stood a chance against Ronald Reagan. Even with the stagnant economy, a negative view of America abroad, a 10% inflation rate and 10% unemployment, Reagan had a pre-campaign lead of at least 4% over the closest Democratic challenger, Henry "Scoop" Jackson. Mondale was 7% behind. I think it is safe to say that the demographics for 1984 have made it extremely difficult for any Democratic candidate to challenge the incumbent Ronald Reagan."*

Walter: *"Thank you Dan, and that's the way it might be, November 5, 1984, this is Walter saying, Good Night."*

That's what a broadcast style commentary on a game of PRESIDENT ELECT might sound like. Strategic Simulations has brought us another winner in this exciting new political election game by Nelson G. Hernandez Sr. With PRESIDENT ELECT we all can be what Henry Major Tomlinson called FDR, a "Happy Warrior of the political battlefield".

PRESIDENT ELECT is SSI's simulation of the campaign for the presidency. In PRESIDENT ELECT you can replay any of the presidential elections from the Kennedy-Nixon contest of 1960 to the Reagan victory of 1980. Or, if you prefer, you can set up a fictional contest between candidates for any of the elections including the 1984 contest. The game has a data file for 21 Democrats, 22 Republicans, and 2 third party candidates.

The Republicans are represented by: John Anderson, Howard Baker, James Buckley, George Bush, John Connally, Phil Crane, Robert Dole, Gerald Ford, Alexander Haig, Orrin Hatch, Jesse Helms, Barry Goldwater, Jack Kemp, Paul Laxalt, John Lindsay, Richard Lugar, Richard Nixon, Ronald Reagan, Nelson Rockefeller, William Scranton, Jim Thompson, and Lowell Weicker.

The two third party candidates are Ed Clark and Barry Commoner.

You are not limited to 1984 if you want to do an a-historical campaign. You can take any election from 1960 on and run any candidates in that historical context; or you can run the historical candidates in an election but change the historical contexts; or you can run non-historical candidates and change the historical contexts as well. For example what would happen if Lyndon Johnson had ended the Vietnam War and had decided to "seek a second term as (our) president?" What would happen if Robert Kennedy hadn't been shot and had run against Richard Nixon in the 1972 election? What would happen if two "big winners" like Lyndon Johnson ('64) and Richard Nixon ('72) were to go against each other?

You can also cross party lines and run candidates of the same party against each other. For example, if you run Jimmy Carter (as an incumbent Republican) in 1980 against Ted Kennedy you will get, in most replays, a game that has the flavor of the 1980 quest for the Democratic nomination.

When running candidates of the same party against one another you should designate the more conservative candidate as the "Republican" and the more liberal candidate as the "Democratic" candidate. How can you tell which

candidate is the more liberal of the two? That's easy. The candidates are rated for social, economic, and foreign policy views. From the ratings on these three views an overall rating is assigned to each candidate. These ratings run from 0 (extremely conservative) to 100 (extremely liberal). Each candidate is also rated for speaking ability, magnetism, and poise. Those candidates that rate high in these latter three measurements will tend to do better in debates and on the campaign trail.

But what if you want to run a candidate not contained in the computer's data file? A candidate who, like Jimmy Carter before the start of the 1976 presidential campaign, is not well known nationally but who you feel can solve the nation's problems. Someone that has a tremendous vision for our country, someone like yourself. What can you do? Never fear for you can run ANY candidate in PRESIDENT ELECT. For candidates not contained in the program you can prepare a data file. If you enter the name of a candidate for President not in the game's stored memory files you will be given the opportunity to answer a battery of 20 questions based on 1980 issues to rate that candidate's political views. Then the newly rated candidate can, on the one hand, take on the best the other party has to offer, or on the other hand, take on your next door neighbor (assuming he or she has been rated).

The game itself is made up of nine weekly turns running from labor day to election day. The players of the two major parties each begin with the same amount of money (29.5 million dollars) which must be used for the various campaign activities such as advertising, campaign stops, and overhead. Third party candidates begin with considerably less funds. The format of the game leaves room for multiple strategies. Do you spend your money early in hopes of building early leads that your opponent can't overcome? Do you save most of it for a big push during the final weeks? Or do you opt for a balanced spending strategy that will stay about the same throughout? The answers to these questions will often make the difference between a narrow victory and a narrow defeat. In one election replay John F. Kennedy won New York by only 400 votes out of over seven million votes cast. Would one more Nixon visit to the state have thrown it to the Republican player? Who knows.

One very interesting element in PRESIDENT ELECT is the possibility of the candidates to debate one another. If the candidates agree they can debate as often as they wish. Once they decide on the number of questions to be asked (2 to 6) the computer will set up the debate, toss the coin to select which candidate answers the first question and ask the question. For example, the question might be: "What measures do you propose to prevent the social security system from bankrupting sometime in the future?" Rather than answering the question directly, the player determines what percentage of the candidate's time will be spent discussing the relevant considerations, stating his own position, contrasting his position with his opponent's, attacking his opponent's position, and killing time. After the second candidate gives his or her responses to the same question a series of rebuttals follow. These are dealt with in the same manner as the main question. In the rebuttals, time must be divided between emphasizing his own position, criticizing his opponent with witticisms and/or moral indignation, implying that the opponent is uninformed, and killing time.

In replays in which only two questions were asked, we found that in most cases the debate could be won using the unorthodox procedure of allocating 50% of the time allowed in one of the five areas and 50% in another area. The debate could often be won on intangibles by this method. However, if you increase the number of questions to 4, 5, or 6 this procedure will rarely work. So, if you want a realistic simulation, use at least 4 questions in a debate. But, if you're strictly out to win, and don't give a hoot about simulation, get your opponent to agree to a two question debate and try the 50/50 ploy on him. Remember that your candidate's speaking ability, magnetism, and poise are figured into a debate.

The rulebook does a reasonably good job of suggesting possible strategies in your campaign spending. One should not, however, be misled by the rulebook's statement that national advertising is the least effective means of swaying votes in individual states. While the statement is true, it can mislead a player to spend very little on national advertising, spending it instead on regional and state advertising. Our replays have shown this to be an ill-advised strategy. A healthy national advertising budget will attack on all fronts and create havoc for your opponent if he isn't putting similar amounts into national advertising. In several replays of some of the closer elections players who had healthy national advertising against opponents who tended to let national advertising slide found a ground swell of support developing for their candidates by the sixth week that was often insurmountable.

From one viewpoint it's too bad that computer game companies have been forced to use elaborate DOS protection techniques on their games. With

that protection it becomes impossible, for the most part, to dig into a game's design in order to see what makes it "tick". Gamers tend to not only enjoy playing games but also enjoy analyzing the game design. Did the designer succeed in his game/simulation, how could it be improved? There are over a dozen board games on the eastern front of WWII alone. Why so many? Because game player/designers have studied the old games and feeling that the old games could be improved upon have designed new games on the same subject. It is through this means that the state of the art in game design is advanced. We don't know the internal rules and formulas for PRESIDENT ELECT. Therefore the designer within us is frustrated. Has Mr. Hernandez correctly factored in the demographics of a particular election year? What if my view of the political demographics of 1984 are different from his. It is very difficult to look into this matter. However it is not impossible.

Although we cannot look into the internal structure of the game, we're not prevented from looking at the structure in a round about way. Let's take the 1984 election fictionalized in our introduction as an example.

A variety of campaign possibilities for 1984 were set, each surrounding Ronald Reagan as the Republican candidate versus either Walter Mondale or Henry "Scoop" Jackson. The contexts were changed and the results are shown in the table on this page.

THE 1984 LABOR DAY ELECTION POLL

INFL.	UNEM.	GNP	WRLD.	REPUBLICAN	-%-	DEMOCRAT	-%-
7	7	2	5	REAGAN	61	Mondale	39
9	9	-2	2	REAGAN	56	Mondale	44
13	13	-4	1	REAGAN	54	Mondale	46
13	13	-4	1	REAGAN	51	Mondale	49
7	7	2	5	Reagan	56	Mondale	43
9	9	-2	2	Reagan	53	Mondale	47
7	7	2	5	REAGAN	57	Jackson	42
9	9	-2	2	REAGAN	52	Jackson	47
13	13	-2	2	REAGAN	51	Jackson	48
7	7	2	5	REAGAN	55	Jackson	45
9	9	-2	2	REAGAN	51	Jackson	49
7	7	2	5	Reagan	46	MONDALE	53
9	9	-2	2	Reagan	50	MONDALE	49
7	7	2	5	Reagan	44	JACKSON	55
9	9	-2	2	Reagan	48	JACKSON	52
13	13	-2	2	Reagan	49	JACKSON	51

INFL.=Inflation rate; UNEM.=Unemployment rate; GNP=Relative strength of the GNP. "-4" is a recession. "-2" is stagnation. "2" is on the border of a healthy economy; WRLD.=Relative evaluation of our world situation. "1" is very negative; "2" is negative. "5" is neutral. World situation is based on the assumption that the U.S. is at peace. Candidates whose names are in all caps are incumbents.

In early attempts to run incumbent Reagan against Mondale, Reagan had Mondale beat before the campaign began. Only with a terrible record (13% inflation and unemployment coupled with a recession and a horrible world situation) did Mondale even stand a chance. This might lead one to think that Hernandez has programmed VERY conservative demographics for 1984. Henry Jackson (a more conservative Democrat than Mondale) was next to run against Reagan. Reagan again had the upper hand, but by a smaller margin. Again the 1984 demographics are shown to be conservative. However look what happens when we begin to play with the question of incumbency. In all but one situation in which the Democrat is the incumbent in 1984, the Democrats have the Labor Day lead! So incumbency would seem to be more important than conservative demographics. Both situations where the economic and world situation is pretty good (7,7,2,5) the conservative incumbent has a huge lead, 61% - 39% for an incumbent Reagan and 55% -44% for an incumbent Jackson. A less conser-

Continued on page 34

THE GREATEST BASEBALL TEAM OF ALL TIME

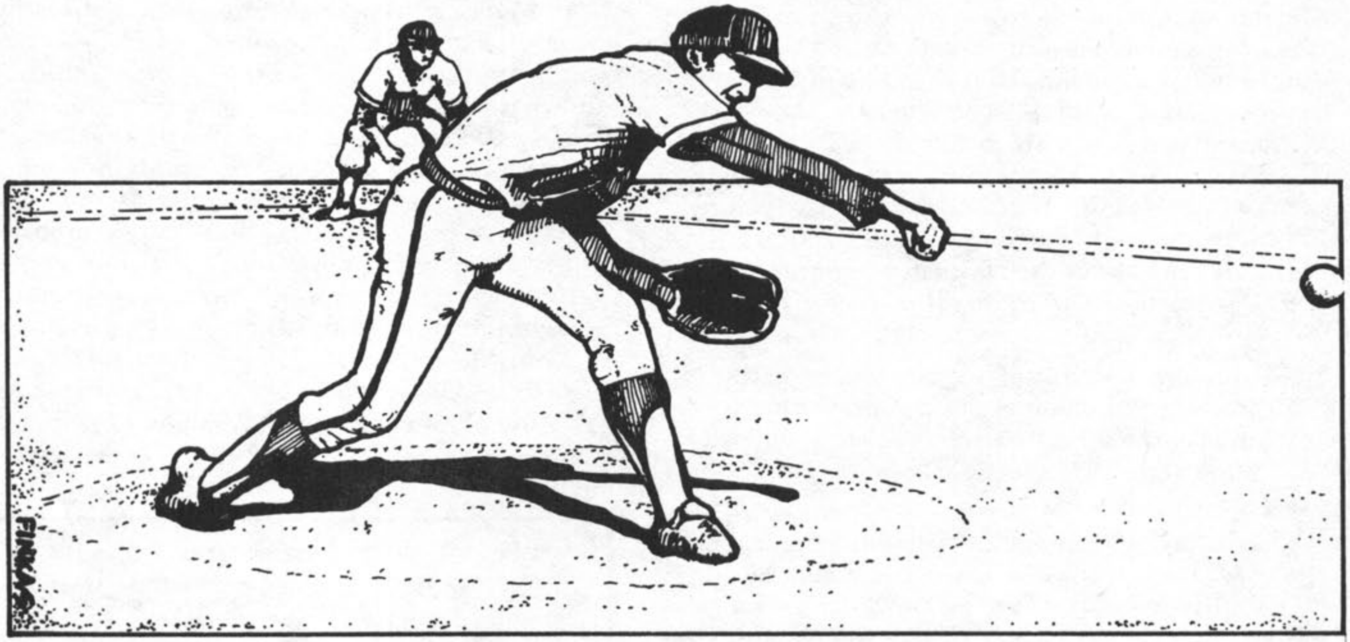


Table-top statistical baseball games are nothing new. "APBA Baseball", "Strat-O-Matic Baseball", and more recently Avalon Hill's "Major League Baseball" have provided thousands of gamers the opportunity to replay great (and not so great) teams of the past.

Now "Stat" baseball players can enjoy the same realistic baseball without having to shuffle through a half dozen or more charts ("Where did the 'Stealing-home-when-the-pitcher-is-arguing-with-the-first-base-umpire' chart get off to?); or flipping/throwing a lot of the cards/dice to determine the outcome; with the touch of a key the result is given. Strategic Simulation's COMPUTER BASEBALL and Avalon Hill's MAJOR LEAGUE BASEBALL are "Stat" baseball in the finest tradition (the latter being a compu-version of the popular board game mentioned above). Both versions will compile the box score for the game and have the capability to keep season statistics. For MAJOR LEAGUE BASEBALL Apple users can use the "G" command to store the game results on a utility disk and keep season stats. SSI will release a "stat compiler" for COMPUTER BASEBALL sometime in 1982.

MAJOR LEAGUE BASEBALL contains the stats for all the players of the preceding season. COMPUTER BASEBALL contains 26 teams that played in 13 great World Series of the past. SSI should have a disk for the 1980 teams for COMPUTER BASEBALL available by the time this issue of COMPUTER GAMING WORLD comes out.

Both games have the capability of entering your own teams (be they Little League teams or famous major league teams of the past). COMPUTER BASEBALL has the capability of entering the players directly while MAJOR LEAGUE BASEBALL required the use of the board game version as well as the ability of your computer to edit text files.

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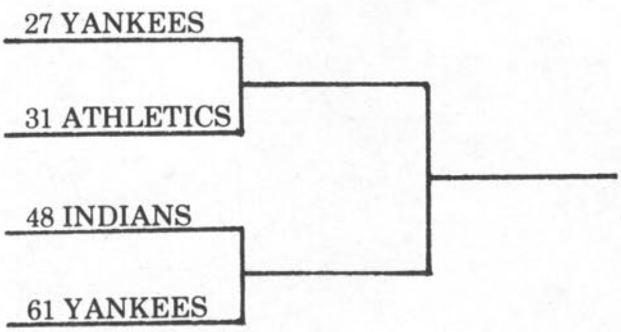
Not long ago the staff at CGW came across an interesting book entitled COMPUTER SPORTS MATCHUPS (by Julian E. Compton with Bruce M. Nash; published in 1981 by Tempo Books; $2.50 paperback). The book contains the results of computerized replays of the great sports teams and individuals in a variety of sports. Of special interest to us is the eight team "All-Time Baseball World Series". Eight teams were selected as the greatest teams in baseball history. A tournament was played to determine the greatest team of all time. The 1927 Yankees won the tournament.

COMPUTER GAMING WORLD would like to see what the results would be if many people replayed that same tournament using COMPUTER BASEBALL or MAJOR LEAGUE BASEBALL (computer version). We have included the stats for the first four teams in this issue. We will include the stats for the second four teams in our second issue (Jan-Feb 1982) and we will print the results of the tournaments in our third issue (Mar-Apr 1982). If you want to replay the "Greatest Baseball Team of All Time" Tournament follow the instructions given on the next page.

THE GREATEST BASEBALL TEAM OF ALL TIME TOURNAMENT

To participate in the GBTOAT tournament you must replay seven complete World Series. The stats for the first four teams are given in this issue. The stats for the other four teams will be given in issue #2. To guarantee that your results are included in our tournament summary issue #3, the results of your replay should be in our hands by February 10, 1982. Each series should be a best of seven with pitchers being rested according to the following formula: 1) Starters must have 4 days rest between starts; figure in appropriate travel days. 2) Relievers must rest according to the number of innings pitched. Less than 2 innings = no rest. At least 2 but less than three = 1 day. At least 3 but less than 4 = 2 days. Any reliever who pitches 4 or more innings requires 3 days rest.

Miscellaneous notes: 1) Do not use designated hitters; 2) Line scores of each game are preferred but not required. Final scores for each game are acceptable; 3) If you wish, send Batting Avg., Home Run, and RBI leaders for the various series; 4) The teams in the second bracket are: 55 Dodgers, 36 Yankees, 34 Cardinals, and 76 Reds.



1931 PHILADELPHIA ATHLETICS

NAME	POS	B	G	AB	R	H	2B	3B	HR	RBI	BB	SO	SB	BA	FA
J.Foxx	1B	R	139	515	93	150	32	10	30	120	73	84	4	.291	.993
M.Bishop	2B	L	130	497	115	146	30	4	5	37	112	51	3	.294	.984
D.Williams	SS	R	86	294	41	79	12	2	6	40	19	21	2	.269	.931
J.Dykes	3B	R	101	355	48	97	28	2	3	46	49	47	1	.273	.974
B.Miller	RF	R	137	534	75	150	43	5	8	77	36	16	5	.281	.987
M.Haas	CF	L	102	440	82	142	29	7	8	56	30	29	0	.323	.989
A.Simmons	LF	R	128	513	105	200	37	13	22	128	47	45	3	.390	.987
M.Cochrane	C	L	122	459	87	160	31	6	17	89	56	21	2	.349	.986
E.McNair	IN	R	79	280	41	76	10	1	5	33	11	19	1	.271	.930
J.Boley	SS	R	67	224	26	51	9	3	0	20	15	13	1	.228	.954
D.Cramer	OF	L	65	223	37	58	8	2	2	20	11	15	2	.260	.979
P.Todt	1B	L	62	197	23	48	14	2	5	44	8	22	1	.244	.995
J.Moore	OF	R	49	143	18	32	5	1	2	21	11	13	0	.223	.973

Pitchers	THR	W	L	G	GS	CG	IP	H	BB	K	ERA
L.Grove	L	31	4	41	30	27	289	249	62	175	2.05
G.Earnshaw	R	21	7	43	30	23	282	255	75	152	3.67
R.Walberg	L	20	12	44	35	19	291	298	109	106	3.74
R.Mahaffey	R	15	4	30	20	9	162	161	82	59	4.22
E.Rommel	R	7	5	25	10	8	118	136	27	19	2.97
W.Hoyt	R	10	5	16	14	9	111	130	37	30	4.22

1948 CLEVELAND INDIANS

Name	Pos	B	G	AB	R	H	2B	3B	HR	RBI	BB	SO	SB	BA	FA
E.Robinson	1B	L	134	493	53	125	18	5	16	83	36	42	1	.254	.995
J.Gordon	2B	R	144	550	96	154	21	4	32	124	77	68	5	.280	.971
L.Boudreau	SS	R	152	560	116	199	34	6	18	106	98	9	3	.355	.975
K.Keltner	3B	R	153	558	91	166	24	4	31	119	89	52	2	.297	.969
L.Doby	RF	L	121	439	83	132	23	9	14	66	54	77	9	.301	.955
T.Tucker	CF	L	83	242	52	63	13	2	1	19	31	17	11	.260	1.00
D.Mitchell	LF	L	141	608	82	204	30	8	4	56	45	17	13	.336	.991
J.Hegan	C	R	144	472	60	117	21	6	14	61	48	74	6	.248	.990
A.Clark	OF	R	81	271	43	84	5	2	9	38	23	13	0	.310	.982
W.Judnich	OF	L	79	218	36	56	13	3	2	29	56	23	2	.257	.970
J.Berardino	IN	R	66	147	19	28	5	1	2	10	27	16	0	.190	
J.Tipton	C	R	47	90	11	26	3	0	1	13	4	10	0	.289	

Pitchers	THR	W	L	G	GS	CG	IP	H	BB	K	ERA
G.Bearden	L	20	7	37	29	15	230	187	106	80	2.43
B.Lemon	R	20	14	43	37	20	294	231	129	147	2.82
B.Feller	R	19	15	44	38	18	280	255	116	164	3.57
S.Gromek	R	9	3	38	9	4	130	109	51	50	2.84
S.Zoldak	L	9	6	23	12	4	106	104	24	17	2.80
S.Paige	R	6	1	21	7	3	73	61	25	45	2.47
R.Christopher	R	3	2	45	0	0	59	55	27	14	2.90

1927 NEW YORK YANKEES

Name	Pos	B	G	AB	R	H	2B	3B	HR	RBI	BB	SO	SB	BA	FA
L.Gehrig	1B	L	155	584	149	218	52	18	47	175	109	84	10	.373	.992
T.Lazzeri	2B	R	153	570	92	176	29	8	18	102	69	82	22	.309	.971
M.Koenig	SS	S	123	526	99	150	20	11	3	62	25	21	3	.285	.936
J.Dugan	3B	R	112	387	44	104	24	3	2	43	27	37	1	.269	.938
B.Ruth	RF	L	151	540	158	192	29	8	60	164	138	89	7	.356	.963
E.Combs	CF	L	152	648	137	231	36	23	6	64	62	31	15	.356	.968
B.Meusel	LF	R	135	516	75	174	47	9	8	103	45	58	24	.337	.950
P.Collins	C	R	92	251	38	69	9	3	7	36	54	24	0	.275	.976
R.Morehart	2B	L	73	195	45	50	7	2	1	20	29	18	4	.256	.945
J.Grabowski	C	R	70	195	29	54	2	4	0	25	20	15	0	.277	.984
C.Durst	OF	L	65	129	18	32	4	3	0	25	6	7	0	.248	.980
M.Gazella	3B	R	54	115	17	32	8	4	0	9	23	16	4	.278	
B.Paschal	OF	R	50	82	16	26	9	2	2	16	4	10	0	.317	

Pitchers	THR	W	L	G	GS	CG	IP	H	BB	K	ERA
W.Hoyt	R	22	7	36	32	23	256	242	54	86	2.64
W.Moore	R	19	7	50	12	6	213	185	59	75	2.28
H.Pennock	L	19	8	34	26	18	210	225	48	51	3.00
U.Shocker	R	18	6	31	27	13	200	207	41	35	2.84
D.Ruether	L	13	6	27	26	12	184	202	52	45	3.38
G.Pipgras	R	10	3	29	21	9	166	148	77	81	4.12
M.Thomas	R	7	4	21	9	1	89	111	43	25	4.85

1961 NEW YORK YANKEES

Name	Pos	B	G	AB	R	H	2B	3B	HR	RBI	BB	SO	SB	BA	FA
B.Skowron	1B	R	150	561	76	150	23	4	28	89	35	108	0	.267	.993
B.Richardson	2B	R	162	662	80	173	17	5	3	49	30	23	9	.261	.978
T.Kubek	SS	L	153	617	84	170	38	6	8	46	27	60	1	.276	.959
C.Boyer	3B	R	148	504	61	113	19	5	11	55	63	83	1	.224	.967
R.Maris	RF	L	161	590	132	159	16	4	61	142	94	67	0	.269	.968
M.Mantle	CF	L	153	514	132	163	16	6	54	128	126	112	12	.317	.983
Y.Berra	LF	L	119	395	62	107	11	0	22	61	35	23	2	.271	.988
E.Howard	C	R	129	446	64	155	17	5	21	77	28	65	0	.348	.993
H.Lopez	OF	R	93	243	27	54	7	2	3	22	24	38	1	.222	.977
J.Blanchard	C	L	93	243	38	74	10	1	21	54	27	28	1	.305	.990
B.Cerv	OF	R	57	118	17	32	5	1	6	20	12	17	1	.271	.983
B.Gardner	IN	R	41	99	11	21	5	0	1	2	6	18	0	.212	

Pitchers	THR	W	L	G	GS	CG	IP	H	BB	K	ERA
W.Ford	L	25	4	39	39	11	283	242	92	209	3.21
R.Terry	R	16	3	31	27	9	188	162	42	86	3.16
L.Arroyo	L	15	5	65	0	0	119	83	53	90	2.19
B.Stafford	R	14	9	36	25	8	195	168	59	101	2.68
J.Coates	R	11	5	43	11	4	141	128	53	80	3.45
R.Sheldon	R	11	5	35	21	6	163	149	55	84	3.59
B.Daley	L	8	9	23	17	7	130	127	51	83	3.95


ODYSSEY:
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MICRO - REVIEWS

DRAGON'S EYE

Each computer gaming company has areas in which they excel. One area in which Automated Simulations excels is their satisfying portrayal of individual combat. From the Temple of Apshai on we have seen them develop software that gives us exciting hi-res battles. In DRAGON'S EYE they have carried this strength to new heights with the striking eye level view of combat between your character and a host of fantasy monsters. The graphics are very nice and the battle actions are pleasing. This is one of the few games that graphically treats individual combat to the point that you must combine combat moves into a logical pattern to prevail over your opponent. For example, a player with a scimitar might enter a rapid sequence of orders that will cause his character to leap forward 6 steps, bring a smashing downward blow upon the monster's head, parry, duck, then back away. If this tactic doesn't work he may try the same sequence with a chop (across the waist) as opposed to the smash (head to toe). It is almost certain that a thrust (straight into the monster) will not bring good results because the scimitar is not made for thrusting.

But let's not get ahead of ourselves. There are some things that the player must do before he gets into battle with all sorts of menacing monsters so dastardly disdainful (get used to it, that's how the rulebook is written). The Dragon's Eye is a magic amulet that is the key to the power of evil in the Seven Provinces. The player's task is to search through the Provinces seeking treasures, dispatching monsters, and hopefully finding and returning the Dragon's Eye to Fel City before 21 days have past. Although the exact point system isn't given, you will receive points for killing monsters, finding treasure, avoiding death (which can occur more than once in an adventure), and finding the Dragon's Eye.

The typical activity for a day might include examining the immediate area in the morning, moving to a new area, examining it, fighting a monster, resting up from the battle, further examining the area again, and if the sun hasn't already set for that day moving on to another region. Sounds like typical fantasy role-playing right? That's what DRAGON'S EYE is for the most part.

The strategic map that governs movement between the several regions in each of the provinces is similar to maps in other fantasy role-playing (FRP) computer games. However, the lines drawn between the regions are not becoming to the visual effect of the map and look a little like a schematic diagram.

In the final analysis it is the individual combat system of DRAGON'S EYE that sets this game apart from others of similar type. It is very well done, challenging to play, and fun. If you like FRP style combat this is the game for you.

DRAGON'S EYE, by Automated Simulations, runs on the Apple II (48K with Applesoft in ROM) or the PET (32K Cassette) computers.

Daniel Hockman

EASTERN FRONT

Before dawn on June 22, 1941, Hitler unleased what he called "the largest military assault in history". Following the preliminary air bombardment, three million German and other Axis soldiers crossed the Nazi-Soviet treaty line beginning the now famous "Operation Barbarossa". Hitler envisioned another blitzkrieg type campaign which would knock Russia out in four or five months. What he got was four years of very hard fighting, the defeat of his armies, and the eventual fall of his Thousand Year Reich.

The Barbarossa Campaign has always been a very popular subject for traditional board wargames. Now this incredible campaign can be played on your Atari 400 or 800 computer. With EASTERN FRONT Chris Crawford (see his article on "The Future of Computer Wargaming" in this issue), has designed what is, to this date, the most impressive computer wargame on the market.

Atari has been telling us how advanced the graphics on their personal computer are. Chris has SHOWN us. EASTERN FRONT utilizes human engineering elements to provide us with a complex yet highly playable game (no mean feat for a wargame). The entire Eastern Front of World War II is represented by a map which covers about ten screens of area. The player uses a joystick to move the cursor in any of the four cardinal directions. As the cursor reaches the edge of the current map the entire map will scroll in the direction of the cursor move until the cursor is stopped or the edge of the whole map is reached. Movement is equally simple. The joystick is used to line the cursor up on a unit (infantry or armor). The player then indicates (again using the joystick) where the unit is to move and who to attack. Keyboard interaction is limited to the "Start", "Option", and "Space Bar" keys; the "Start" key to start the game, the "Option" key to play the game with a special beginners option,

and the "Space Bar" to execute orders after movement is entered.

The rule book, while not as "slick" as those put out by other computer game companies, is well done. Following loading instructions, Chris gives us an overview of the map and units. Traditional wargamers will recognize sections such as Movement, Zones of Control, Combat, Logistics, Seasons, Hints on Strategy and Tactics, and Designer notes. Most sections are divided into "Historical background" and "Mechanics".

Chris mentions in the rulebook that the feature of which he is the most proud, in EASTERN FRONT, is the artificial intelligence. He has reason to be proud. The computer plays the Russians and plays them very well. The unique thing about the artificial intelligence feature of the game is the fact that the computer is thinking and planning it's move while you are entering your's. When you hit the space bar to end your order entering phase, the computer immediately begins the execution of the turn on the basis of the moves it's been considering. Thus the longer you take to enter your move the more "considered" the move by the computer. Can you think of a more effective way to speed up slow players?

If you own an Atari personal computer you owe it to yourself to have this game. If you are considering the purchase of a personal computer but haven't decided on which one yet, take a look at this game at your local computer store, it will make you look twice at the Atari system.

EASTERN FRONT runs on the Atari 400 or 800 personnal computer. The disk version requires 32K and costs $29.95. The cassette version requires 16K and costs $26.95.

Stanley Greenlaw

MIND THRUST

MIND THRUST is a game played between you and the Computer. The goals are straightforward

1.) To remove all opposing playing pieces, or

2.) To be the first to create a continuous chain of your pieces across the width of the board.

Play consists of alternate turns during which one may add a piece or attack abutting opposing pieces. The opponent may defend against an attack. The contest arises from correctly choosing which opposing pieces to attack or which of your pieces to defend. A successful defense is as important as a successful attack but is made more difficult by rules which make the allowable points of defense fewer than the available points of attack.

MIND THRUST gives you two options at the start of the game. You may choose which side of the board you prefer and whether you wish to begin first or let the computer do so. The first option is of little consequence. The second is much more significant. My experience was that if I started I almost invariably won but it was a much different story when the computer started the play. We were pretty well matched when "She" started first. An interesting feature, which permits a bail out if going got tough, is the ability to switch sides at any point in a game and as many times as you wished. The rules called it 'Legalized Cheating'. It may sound like a panacea but fortunately, it isn't.

The play for this article was done on a TRS-80 Mod III 16K unit. Compatability with the tape was good but you Mod III users will notice that the tape loading signal of two asterisks is not two is asterisks. While the one on the right does the expected the left asterisk becomes a rapidly changing run of characters. Also, on the board, where an up arrow would appear on the screen of a Mod I it becomes a beginning bracket symbol ([) on your screen. This causes no problem.

The program in itself is very well done, it moves nicely, says the right thing at the right time, and gives a nice clean ending when you choose not to continue play by returning you to a default start so your machine is ready to go to something new. The rules and plays of MIND THRUST are easily and quickly learned making it an excellent home demonstration game to make believers out of those non-gamers and non-computerists that may drop in.

The information booklet is very well done and the packaging is excellent. I look forward to acquiring additional items from this manufacturer.

MIND THRUST runs on the TRS-80 (Levels I, II, or III) computer.

Barbour Stokes

MISSION ESCAPE

In MISSION ESCAPE you play the role of a star commando who has escaped the cell on an Imperial security station. Like the legendary Luke Skywalker and Hans Solo you flee from level to level fighting imperial storm-troopers, robots, and drones as you attempt to reach the tenth level and escape.

Don't be fooled by the arcade type screen that you see when you play the game. While reactions and coordination are important in MISSION ESCAPE the most important factor in the game is strategy. You and your enemies are limited in firing lasers and missiles only at certain angles. Fire can only be made at angle increments of 45 degrees. Strategy in MISSION ESCAPE involves

lining up enemy units on 45's and 90's, blasting them away, and still ending your turn not lined up in a surviving enemy's 45's or 90's. This takes real strategy especially at higher levels of the security station where you will be facing more than two dozen enemy units at a time. In addition to the strategic element, MISSION ESCAPE forces you to think fast. Your turn lasts until three orders are entered or ten seconds pass, whichever comes first. He who thinks or acts slowly will die.

Strategic tips are pretty well covered in the rules. The most important thing to remember is that the enemy will always shoot before it moves. Therefore if you end your turn out of line with any enemy unit you know you will not be hit that turn.

Another point to keep in mind is that while units that are at 90's are easy to identify (i.e. directly N, S, E, W of you) those on 45's are much more difficult to spot. Developing your sense of angles will lead to higher scores.

A nice feature of the game is that the five highest scores are kept on file and displayed on the screen after each game (just like the coin-operated arcade games). If you want to clear the high scores for any reason you can do so by hitting the "C" key when the disk is booting. The only problem with the game is that the units are so small that on a small T.V. (which lacks the resolution of a monitor) it is a slight strain to distinguish units and calculate the 45's.

MISSION ESCAPE is one of a handful of games to combine arcade features with what is in reality a strategy game.

MISSION ESCAPE runs on the Apple II (48K) computer.

Graham Masters Jr.

ODYSSEY

ODYSSEY was the program that sold me on an Apple computer. At that time, the graphics were the best I had seen on a computer game. ODYSSEY and its predecessors, "Wilderness Campaign" and "Dungeon Campaign", are still very good programs, although ODYSSEY is undoubtedly the best (as well as the most time consuming) of the three. Neither ODYSSEY or "Wilderness Campaign" can be mastered in a single setting, and unless you get killed off quickly, both will take a while to complete.

ODYSSEY requires careful tactics with money, people and food. Food consumption depends on party size. Enough people are needed to carry all the goods, but too many people eat too much food. If you have too many people, you will spend all your time feeding them, rather than gathering money and treasure. Usually, forty to fifty people make a good party size throughout most of the game. Before leaving the first island, it is best to have between sixty and ninety.

There is also strategy involved in bargaining. Everything is negotiable, but if too low a price is offered, the merchants get insulted and take the item off the market. A good rule of thumb is to offer half the asking price or half of the retail price, whichever is lower. I am generally able to buy food packs for 4 Quadroons . If you offer the same price twice in a row, the merchant will often stop bidding, so it is best to increase your bid by 1 Quadroon each time.

Another consideration is what should be carried. I can say that everything has a use, although it may not be apparent at first. Shovels are used for avalanches and certain kinds of doors, for example. As a hint, do not leave the first island without enough helmets for everyone. A common myth I have heard is that magical items have no use except on the first island. In fact, several (at the very least), do have uses later.

ODYSSEY is relatively bug-free, with two notable exceptions: excess people and too many kinds of possessions cause problems. If you have over 127 people, you will find it impossible to enter towns or die of starvation without stopping the program. The possessions bug only occurs when you have over 39 different kinds of possessions and you finish the game.

ODYSSEY runs on the Apple II (48K diskette, integer) computer. $30.00

Deirdre L. Maloy

REVERSAL

Dan and Kathe Spracklen, who wrote the computer chess program Sargon, now introduce **Reversal**, a computerized version of Othello. In case you don't know how Othello is played, the object of the game is to trap your opponent's pieces between two of yours. Those pieces are then turned over and become yours. This goes on until all 64 squares of the board are filled. The pieces are then counted and the player with the most pieces wins. This, of course, makes it a true strategy game as there are no random factors.

When the program is loaded, it asks whether you want to play against the computer, play against another person with the computer as the monitor, or custom set up the board. One flaw is that if you reply incorrectly to this question, the program aborts to machine language and you have to reload. Next you choose the strategy level at which

the computer will play; beginner, intermediate, or advanced. Then you choose the amount of time the computer will take to decide on its move. This can be anywhere between 2.5 seconds at level 1 to 30 minutes at level 9. It next asks you whether you want to be black or white. (Black moves first.).

The program switches easily between text and graphic displays. The Hi-Res graphic display shows the current board, the number of pieces are shown with faces. The expression on these faces changes through the game to show the status of that player. The leading player's pieces are grinning; the losing player's are frowning. For those who feel this is silly, the faces can be eliminated. The cursor can be moved through all the legal positions by using the right and left arrow keys. When you find the position you want, you press the return key which places your piece at this position and flips the appropriate pieces. This feature greatly speeds up the game as compared to earlier computer versions.

In case you find the move you just made was unwise, it can be taken back by pressing CRTL B. The last piece played is then removed and all the flipped pieces restored to their position prior to the move. If you wish, you may continue backing up until a proper position is reached. If you are unsure as to a good move, you can ask the computer for help. The computer will suggest a move. If you would like to see past moves, you can do so by switching to text which shows the past moves in standard chess notation.

Othello is a classic strategy game. This is an accurate adaptation for the computer with various features to enhance the game. **Reversal** plays quickly and easily, the graphics are good, and the computer can be hard to beat. It is excellent and I recommend it.

Reversal, by Hayden, runs on the Apple II (32K diskette-$34.95; 24K tape-$29.95).

Bob Boyd

TIME TRAVELER

TIME TRAVELER is a text oriented game in which you are sent back in time to find 14 rings. Each ring is hidden in a different time period from 1350 B.C. to 1942 A.D. and has a special power that you may use once you possess that ring. There is a limit to the number of rings you may carry at one time; the others are dropped off at the Time Lab for victory points.

The program begins by telling you where each ring is by time era. You decide which ring you will seek first, and you are sent to that era. On arriving, the program will ask which of two political factions you want to join. You may change sides at any time, but doing so costs points. Then it's off to find where the ring is hidden. A text map of the area indicates houses, fields, armory, treasury, and other possible locations. Amidst the tasks of gathering allies, weapons and gold, you may find yourself taxed, chased by guards (regardless of whose side you're on), and possibly even imprisoned or slain. However this does not present a problem as the time machine will send you off to another era at full strength to seek out the next ring. As long as you keep at the game, you should win out in the end.

After several false starts, I began to understand how to win the game. I fear that, after a person developes a strategy, the game will quickly become a series of stale replays. There are no differences between eras other than the name of the era and its political factions. A little flavor in the sayings, or the signs might have helped. I soon tired of seeing "KEEP OFF THE GRASS" everywhere.

Documentation is ample; five pages including time periods, general rules, commands with explanations, and descriptions of the rings with their powers. One ring, "escape", was missing from the list, and the 'booting' instructions for Apple are inaccurate. Mine booted straight from the disc. The disk is in all probability more up to date than the booklet. I would recommend that you try this game several times before deciding whether to buy it or not.

TIME TRAVELER runs on the TRS-80, Pet, and Apple II computers. $24.95

Terry Romine

SIMULATION *Continued from page 10*

play out a whole battle one minute at a time. On the other hand, if a turn represents one year then the game probably deals with Grand Strategy over a fairly long time.

The SCOPE of a game is the way in which the simulation is restricted to certain events. Every game has limits because no game can cover everything; the game designer usually established them early on. The most obvious limits are time and geography. Say you're simulating the invasion of Europe in 1944, you have a choice of beginning the game with the Allies committed to a landing in Normandy or you can start earlier and let the player choose the site. Similarly, you can end the game when the Allies are securely ashore or continue until Germany has surrendered.

Continued on page 34

```
    -45 TO L
    GOSUB FIND
    T / 45 TO INDEX ; PREPARE TO MOVE
    IF M - -500 GOTO TURN
    T - N TO AIM
    0 - M TO SHOT
    4 TO Q
    IF M < -100 GOTO TURN
    0 TO Q
  KILL
    AIM TO RADAR
    IF RADAR > 0 GOTO TURN
    0 - RADAR TO SHOT
    GOTO KILL
  FIND
    T - L TO RADAR
    IF RADAR > 0 ENDSUB
    IF RADAR < M ENDSUB
    RADAR TO M
    L TO N
    IF M < -20 ENDSUB
    T - L TO AIM
    0 - M TO SHOT
    ENDSUB
  SLOW
    SPEEDX / 2 TO SPEEDX
    SPEEDY / 2 TO SPEEDY
    ENDSUB
  WALL
    T + 45 TO T
    T / 45 TO INDEX
    GOTO TURN

******************************

; ROBOT "TEST"
SCAN
   AIM TO RADAR
   IF RADAR < 0 GOSUB FIRE
   RADAR TO R
   IF R < 20 , 20 TO R
   1000 / R + AIM TO AIM
   GOTO SCAN
FOUNDS2
   J + AIM TO AIM
FOUND
   I + AIM TO AIM
FIRE
   0 - RADAR TO SHOT
   600 / RADAR TO I
   GOTO SEARCH
AGAIN
   0 - RADAR TO SHOT

SEARCH
   0 - I TO I
   AIM + I TO RADAR
   IF RADAR < 0 GOTO FOUND
   0 - I TO I
   AIM + I TO RADAR
   IF RADAR < 0 GOTO FOUND
   AIM TO RADAR
   IF RADAR < 0 GOTO AGAIN
   3 * I TO J
   AIM + J TO RADAR
   IF RADAR < 0 GOTO FOUND2
   0 - I TO I
   0 - J TO J
   AIM + J TO RADAR
   IF RADAR < 0 GOTO FOUND2
   ENDSUB
```

SIMULATION *Continued from page 32*

Geographically, you can show just the beaches (even a single beach) or all of western Europe. These choices are obviously related. If you choose a time period of 18 hours on June 6, you needn't show more than the region near the landing. If you choose to show the rest of the war then you'll have to have most of Europe on the map. Scope and Scale are related in the same way.

Another characteristic is the EMPHASIS. This is the designer's idea of what was important about the events being portrayed. The idea is to model the important things in detail and make the less important factors abstract. In this way, the players don't waste too much time making decisions which will not influence the outcome.

One final caution: when reading a review of a game, stay alert as to whether the simulation or the game system is being evaluated. A good game system is fun while a good simulation is realistic. Some games do well in both areas while others emphasize one area over the other. An astute reader knows his or her own tastes.

AIR FORCE *Continued from page 21*

having to start from scratch each mission. For example, if a pilot normally carries the same ordinance, he can enter the information once and store it, calling it up each time he flies a mission needing that weapon configuration.

CAMPS' forte is its ability to pinpoint danger and predict the results of attempting to surpass the danger through ECM (Electronic Counter Measures) or direct attack. CAMPS will give, upon request, kill probabilities for any point along the flightpath, at any altitude and at any speed. In this manner the pilot can tailor his flight to follow the course of least danger. Where he must fly through danger, the pilot uses CAMPS to plan his counter measures.

The Air Force isn't the only branch of the service that is interested in CAMPS. The Army is looking at CAMPS as a possible system to use with their AH-64 Apache attack helicopters. The Marines (at Quantico, Virginia) are using CAMPS as a training device. The Marine version of the program has a random number generator which interacts with the kill probability numbers of the student's proposed flight path. If the "die roll" calls for it, the student is shot down, leaving him to answer to his instructor.

It is interesting to note that while Comarco uses Convergent Technologies hardware for the field version of the system, CAMPS (in a modified version) exists for the Apple II computer. Who knows, next year we may see an Apple II version of CAMPS available from Comarco, Incorporated. How about it Comarco?

CRUSH *Continued from page 22*

Bob Boyd (Shattered Alliance and Reversal reviews) has a strategy which he claims gives him scores in the thousands although he admits the strategy makes for a slow game. The Sea Monster carcass is used. Of the 170 Crunch Credits allowed to the carcass, 120 are used for very fast regeneration. Decrease the strength of the carcass and you get back 15 points. Use 60 points on hard armor. The objective is survival and the city is San Francisco. Game strategy involves staying in the water far enough away from shore that no land-based units can harm you. Grab helicopters as they fly by and eat them. If you are famished, get close to land, grab a meal or two and retreat back to the bay. The only thing that can really hurt you is the Mad Scientist. When he appears immediately dive and come up off the screen in another map portion. When you return he will be gone.

If you have enjoyed other Automated Simulation games you will not be disappointed in this one. It has the traditional Automated Simulation game mechanics, improved graphics, and a highly entertaining theme.

CRUSH, CRUMBLE, AND CHOMP! runs on the Apple II (48K) or TRS-80 (32K diskette, 16K tape) computers.

POLITICAL APPLE *Continued from page 25*

vative incumbent Mondale would also have a comfortable lead of 53% - 46%. In all scenarios where neither Reagan nor the Democratic candidate has the advantage of incumbency Reagan had the Labor Day lead.

What our polls reveal to us is that the 1984 demographics are fairly conservative but that incumbency is probably the single largest factor in voter popularity. We now can agree or disagree with these findings and decide for ourselves if the PRESIDENT ELECT is accurate as a gaming simulation. On the other hand we can ignore the accuracy question all together and simply enjoy the game. After all, who knows how the voter's mind really works, right?

INITIAL COMMENTS

In addition to games mentioned elsewhere in this issue the following games have been received by CGW. Most but not all of these will receive more detailed attention in future issues.

Adventure International
Box 3435 Longwood, FL 32750

ADVENTURES 10-11-12: These three adventures which come on one diskette are part of a continuing unconnected series of text adventures put out by Adventure International. Adventures 10 and 11 together make up SAVAGE ISLAND. Adventure 12 is GOLDEN VOYAGE. Available on the Apple II and TRS-80 computers. $39.95.

PLANETOIDS: AI's version of the popular arcade game. Available on the Apple II and TRS-80 computers.

Avalon Hill Game Company
(Microcomputer Games Division)
Baltimore, MD 21214

EMPIRE OF THE OVERMIND: EOM is a text fantasy adventure game utilizing standard two word commands. The game includes a beautifully imprinted epic poem, "Rhyme of the Over-Mind", which gives clues for the adventurer. Apple, Atari, TRS-80. $30.00

TANKTICS: Designed by Chris Crawford (see his article in this issue on the future of computer wargaming). Tanktics is a computer game of armored combat on the Eastern Front. The game includes a playing board and counters. TANKTICS runs on the Apple, Atari, Pet, and TRS-80 computers.

C E Software
801 73rd St.
Des Moines, IA 50312

SWORDTHRUST 1: The beginning of a series of text adventures in which characters develop and can go from adventure to adventure. #1 is the master diskette needed to generate fantasy characters. Disk #1 also includes adventure #1: "The King's Testing Ground". Look for more detailed treatment on the whole series in issue #2 of CGW. The series runs on the Apple II (48K with Applesoft in ROM) computer.

SWORDTHRUST 2 --"The Vampyre Caves"

SWORDTHRUST 3 --"The Kidnappers Cove"

SWORDTHRUST 4 --"The Case of the Sultan's Pearl"

SWORDTHRUST 5 --"The Green Plague"

WALL STREET: A game of high finance in which players play the stock market. Players must try to gain inside market information in order to best know when to buy and sell. But the information doesn't come free. The daily stock prices can be output to a printer. Apple II (48K).

Hayden Book Company, Inc.
(Computer Software)
50 Essex St.
Rochelle Park, NJ 07662

BATTER UP!!: A microcomputer baseball game for the TRS-80 (16K tape) computer. Three levels of play.

BACKGAMMON: Hayden's version of the ancient boardgame. "Brutus" is the preprogrammed player. TRS-80, $10.95.

BLACKJACK MASTER: A Blackjack simulator/tutor/game that teaches, evaluates, and tests, betting strategies for blackjack. BLACKJACK MASTER is not a harmless little game to entertain you. It is a serious program that can help you develop and evaluate a system for winning at Blackjack. TRS-80, $29.95.

GRIDIRON: Subtitled "A Microfootball Game" GRIDIRON is a real-time version of football. As the play develops on the screen a step-by-step description of the play is printed at the bottom of the screen. TRS-80, $12.95

ROYAL FLUSH: Competitive poker solitaire. Played alone or against any number of players, ROYAL FLUSH uses 52 cards and a 5x5 playing board. The object of the game is to achieve the highest possible score by arranging 25 cards randomly dealt. Pet and TRS-80 (tape). $14.95.

Hayden Book Company, Inc.(books)

ANDROID DESIGN: Written by Martin Weinstein, ANDROID DESIGN is a book on practical approaches for robot builders. It examines what an android is, what you can expect it to do, and how this will translate into the design requirements. $11.95 (paperback), 248 pgs.

Muse Software
330 N. Charles St.
Baltimore, MD 21201

CASTLE WOLFENSTEIN: A game of action-adventure that attempts to bridge the gap between arcade-type games and the more complex adventure/fantasy games. CASTLE WOLFENSTEIN puts the player in the role of a captured Allied soldier during WWII. You must escape the castle (hopefully with the war plans for Operation Rheingold). Success means a promotion. Failure means recapture or death. Apple II(48K), $29.95.

Programma International, Inc.
(A subsidiary of Hayden Book Co.)

AUTOCHECKERS: HIRES version of "American" checkers. Apple II $19.95 (disk).

CLOWNS AND BALLOONS: HIRES arcade type game in which acrobatic clowns leap and burst balloons. The sound routines are a lot of fun. Apple II (32K integer), $19.95 (disk).

GUIDED MISSLES: A real time HIRES shooting gallery simulation for two players. Each player mans a missile turret, aims and fires at the targets flying above. Apple II (16K machine lang.), $19.95.

MICRO INVADERS: Programma's version of the popular arcade game. An exciting game. Apple II (48K machine lang.), $19.95.

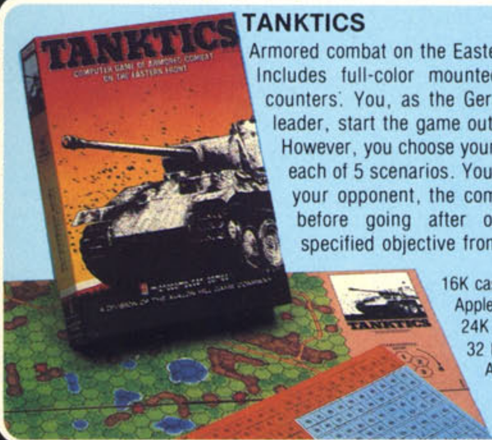
Strategic Simulations, Inc.
465 Fairchild Dr.
Mountain View, CA 94043

CARTELS AND CUTTHROATS: A highly realistic business simulation in which you play the role of a corporate president. Your job is to guide your manufacturing company in the direction that will provide the highest profits. Not only a good game but also an excellent teacher. A nice feature is that the game can be played at the office (or wherever) with the computer owner entering the moves and giving the printed results to the players the next day. Apple II (48K), $39.95.

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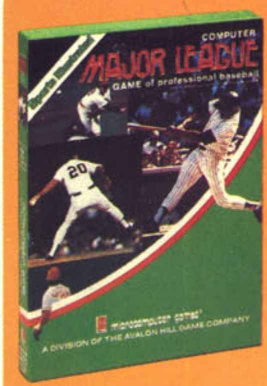
The Avalon Hill Game Company, a pioneer in the design of adventure games, presents a totally different breed of computer strategy games. Each is complete with loading and playing instructions, along with cassette or diskette software for the four most popular home computers. When ordering be sure to specify which computer it is for.



TANKTICS

Armored combat on the Eastern front of WWII. Includes full-color mounted mapboard and counters. You, as the German tank platoon leader, start the game outnumbered 2 to 1. However, you choose your tank types before each of 5 scenarios. You also specify what your opponent, the computer, is to have before going after or defending the specified objective from the Russians.

16K cass: TRS-80 level II
Apple II, Pet 2001 $24
24K cass: Atari 800 $24
32 K disk: TRS-80 level II
Apple II, Atari 800
$29



MAJOR LEAGUE BASEBALL

Recreate an entire baseball season, championship or world series with real life player statistics. Avalon Hill has analyzed full season statistics for each player, converting it to computer memory so each performs in your game just as he does in reality. YOUR ability at managing could make an also-ran become a pennant winner.

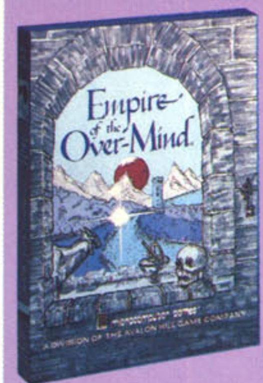
16K cass: TRS-80 Model I	$25
32K cass: Apple II	$25
32K disk: TRS-80 Model I	$30
48K disk: Apple II	$30



STOCKS AND BONDS

Here's your chance to be a Wall Street genius. Players choose a general strategy and invest in the stocks that fit their game-plan. Play it safe, gamble or do a little of both. In a "bear" market players investing heavily could lose their shirts, while a "bull" market would cause them to make great gains. The winner makes the most money through game transactions.

16K cass: TRS-80 Mods. I & III, Pet 2001	$20
32K cass: Apple II, Atari 800	$20
32K disk: TRS-80 Mods. I & III	$25
40K disk: Atari 800	$25
48K disk: Apple II	$25



EMPIRE OF THE OVERMIND

Enchanting solitaire game. Embark upon an herioc quest to a different plane of reality. The Overmind, a tyrant that is part machine, part spirit of evil, cleverly overthrew the great king, who escaped and planned revenge that has taken 1,000 years to fulfill. Now, YOU must travel to the Empire of the Overmind and destroy the abomination. Includes deluxe copy of Rhyme of the Overmind.

40K cass: Atari 800	$30
48K cass: TRS-80 II, Apple II	$30
48K disk: TRS-80 II, Apple II	$35



MIDWAY CAMPAIGN

Your computer controls a huge force of Japanese ships whose objective is to invade and capture Midway Island. In the actual engagement, the Japanese made several tactical errors which cost them the battle. Your computer probably won't make the same mistakes! You command the badly outnumbered and outranged U.S. Naval Forces. Your only advantage is surprise.

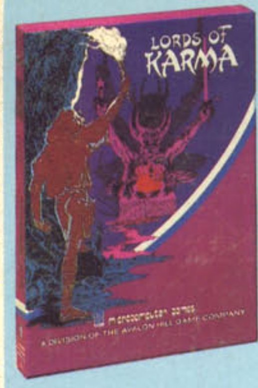
16K cass: TRS-80 II, Apple II, Pet 2001	$15
32K cass: Atari 800	$15
32K disk: TRS-80 II, Apple II	$20
40K disk: Atari 800	$20



CONFLICT 2500

In 2500 AD, earth is threatened by attacking aliens programmed with an infinite number of attack strategies with which to tease the player who must defend earth. A variety of spaceships on the screen adds an extra dimension to the excitement and suspense of this clever SF game.

16K cass: TRS-80 II, Apple II, Pet 2001	$15
32K cass: Atari 800	$15
32K disk: TRS-80 II, Apple II	$20
40K disk: Atari 800	$20

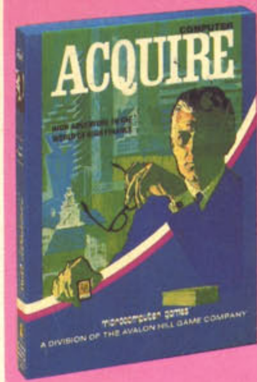


LORDS OF KARMA

Like an intriguing puzzle! The fun is in deciphering secrets while exploring a mythical, magical city and countryside, while at the same time avoiding lurking monsters. You tell tho computer what you want by typing simple sentences. The computer has many surprises in store.

32K cass: Apple II and Pet 2001	$20
40K cass: Atari 800	$20
48K cass: TRS-80 II	$20
48K disk: TRS-80 II, Apple II	$25

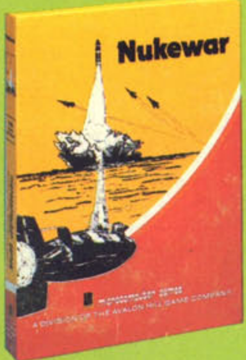
AH QUALITY



COMPUTER ACQUIRE

The object of the game is to become the wealthiest person in this "business" game about hotel acquisitions and mergers. For 2 to 6 players it is a subtle game of interplayer strategy. As a SOLITAIRE game you play against the computer. One can even pit the computer against itself in this faithful recreation of the classic board game.

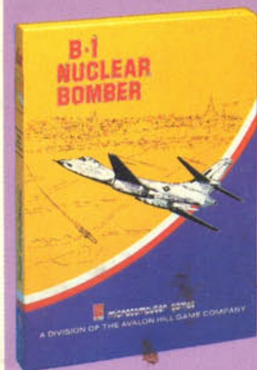
16K cass: TRS-80 II, Apple II, Pet 2001	$20
32K disk: TRS-80 II, Apple II	$25



NUKEWAR

Nuclear confrontation between two hypothetical countries. Defend your country by massive espionage efforts, or by building jet fighter bombers, missiles, submarines and anti-ballistic missiles. Your cold and calculating computer will choose its own strategy! Very fast paced for players of all ages and levels of experience.

16K cass: TRS-80 II, Apple II, Pet 2001, Atari 800	$15
24K disk: Atari 800	$20
32K disk: TRS-80 II, Apple II	$20



B-1 NUCLEAR BOMBER

You are the pilot of a B-1 bomber on a mission over the Soviet Union. You must fly through stiff Russian defenses to the target city, bomb it and return home. Your computer controls the Soviet MIG fighters and surface-to-air missiles. You must rely on your electronic counter measures and self-defense missiles.

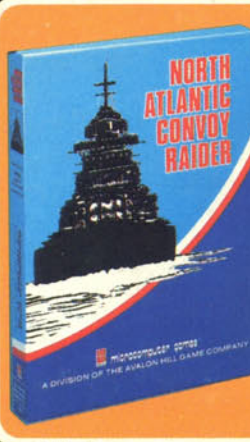
16K cass: TRS-80 II, Apple II, Pet 2001	$15
24K cass: Atari 800	$15
32K disk: TRS-80 II, Apple II	$20



PLANET MINERS

One to four players compete with each other and the computer to stake valuable mining claims throughout the solar system in the year 2050. Each player must decide which ships to send to which planets and when to try "dirty tricks" like a sabotage and claim jumping.

16K cass: TRS-80 II, Apple II, Pet 2001	$15
24K cass: Atari 800	$15
32K disk: TRS-80 II, Apple II, Atari 800	$20



NORTH ATLANTIC CONVOY RAIDER

In the Bismarck convoy raid of 1941, the computer controls the British convoys and battleships. Will the Bismarck sink the Hood, only to be sunk by the Rodney and King George V, as in history? Or, will the Bismarck cripple or sink the British Home Fleet and go rampaging through the convoy lanes?

16K cass: TRS-80 II, Apple II, Pet 2001, Atari 800	$15
24K disk: Atari 800	$20
32K disk: TRS-80 II, Apple II	$20

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